WORLD HEALTH ORGANIZATION
REGIONAL OFFICE FOR THE WESTERN PACIFIC

REPORT ON
SECOND SEMINAR ON DENTAL HEALTH

Adelaide, South Australia, 10 to 20 February 1959

SECOND SEMINAR ON DENTAL HEALTH

SPONSORED BY THE

WORLD HEALTH ORGANIZATION, REGIONAL OFFICE FOR THE WESTERN PACIFIC

IN COLLABORATION WITH

THE AUSTRALIAN GOVERNMENT

AND THE

AUSTRALIAN DENTAL ASSOCIATION

ADELAIDE, SOUTH AUSTRALIA

10-20 FEBRUARY 1959

FINAL REPORT

World Health Organization
Western Pacific Regional Office
Manila, Philippines
March, 1959

C O N T E N T S

		Page
1.	GENERAL DESCRIPTION OF THE SEMINAR	1
	1.1 Its Origin	1
	1.2 Objectives	1
	1.3 Preliminary Planning and Overall Responsibility ..	1
2.	ORGANIZATION AND ADMINISTRATION	2
	2.1 Location of Seminar and Accommodation	2
	2.2 Language	2
	2.3 Working Hours	2
	2.4 The Local Organizing Committee	3
	2.5 Clerical and Reporting Staff	3
	2.6 The Seminar Director	3
	2.7 The Faculty	3
3.	THE SEMINAR PROGRAMME AND PROCEDURE	4
	3.1 Opening Ceremony	4
	3.2 Working Papers	4
	3.3 Working Procedure	4
	3.4 Film and Special Topic Sessions	5
	3.5 Closing Session	6
	3.6 Presentation of the Seminar Highlights at the 15th Australian Dental Congress	6
4.	EVALUATION	6
5.	SOCIAL FUNCTIONS	6
6.	PUBLICITY	7
7.	ACKNOWLEDGEMENTS	8
8.	TOPIC PROGRAMMES	9

9. FINAL CONSOLIDATED REPORTS AND RECOMMENDATIONS 14

10. GENERAL RECOMMENDATIONS 36

ANNEXES

I TIMETABLE 37

II LIST OF PARTICIPANTS 39

III DISCUSSION GROUP MEMBERS 45

IV REFERENCE MATERIAL AVAILABLE TO PARTICIPANTS 46

V SUMMARIES OF WORKING PAPERS 47

VI EVALUATION 69

-oOo-

1. GENERAL DESCRIPTION OF THE SEMINAR

1.1 Origin

At the request of the Australian Government and in keeping with the interest stimulated in dental health following the first WHO/WPR Dental Health Seminar held in 1954 in New Zealand, the Regional Committee for the Western Pacific Region and the World Health Assembly approved the holding of a Dental Health Seminar in Adelaide, South Australia, from the 10th to the 20th of February 1959 in conjunction with the Fifteenth Australian Dental Congress, 23rd to 27th February.

Although the two meetings were separate, the term "attendance at the Seminar" included attendance at the Congress. All the overseas participants at the Seminar were made honorary members of the Congress.

1.2 Objectives

The objectives of the Seminar were:

1.2.1 To review accomplishments in dental health in the Western Pacific and South-East Asian countries during the last five years (since the Dental Health Seminar in New Zealand in 1954) especially in the field of preventive dentistry.

1.2.2 To identify and discuss current dental health problems in the Western Pacific and South-East Asian countries, and the roles of the national health administration and the dental health profession in their solution.

1.2.3 To discuss standardization of reporting dental health conditions.

1.3 Preliminary Planning and Overall Responsibility

All matters concerning technical and administrative aspects of the Seminar were subject to the approval of the Regional Director (I. C. Fang, M.D.).

Operational responsibility for the Seminar was vested on the Regional Public Health Administrator (S. Falkland, M.D.) at the WHO Regional Office for the Western Pacific, Manila. A preparatory committee at the Regional Office consisted of two Public Health Administrators, the Education and Training Adviser, the Health Education Adviser and the Chief, Administration and Finance. This committee, working closely with the Dental Health Officer at WHO Headquarters, Geneva, selected the Seminar faculty members, established the titles of the working papers and selected their authors, worked out the

geographical distribution of participants and attended to endless administrative details. Submission of reviews of dental health services from participating countries, in accordance with broad guidelines, were called for 30 September 1958. Ten working papers were prepared by selected writers and submitted to WPRO by the beginning of November. The papers were edited to conform with WHO standard documents and distributed to all the faculty members and participants in mid-December 1958 (8 papers) and in early January 1959 (2 papers).

Close contact was maintained with the members of the Faculty especially in selecting topic titles and grouping of working papers for discussion at the Seminar.

2. ORGANIZATION AND ADMINISTRATION

2.1 Location of Seminar and Accommodation

The Seminar itself was held in the Mawson Building of the University of Adelaide. Accommodation included a large room for plenary sessions, smaller rooms for discussion groups, and offices, staff rooms, clerical staff rooms and a theatre for film showings.

Morning and afternoon tea and luncheon were provided at the University Refectory which was only a few minutes walk from the Mawson Building.

Most of the participants were accommodated at St. Mark's University College, about a mile from the Mawson Building. Dr. Thi Thin Vu from Vietnam, the only woman attending the Seminar, was at St. Anne's College. Most of the faculty members stayed at hotels.

2.2 Language

The English language was used exclusively during the Seminar. This proved generally suitable, although several participants found difficulty in using English freely in vigorous and continuous debate.

2.3 Working Hours

The Seminar met from 9 a.m. to 12.30 p.m. and from 2 p.m. to 5 p.m. on ten days, with a break for tea in the morning and afternoon. Sessions were either plenary, discussion groups or special sessions for film showings and other topics that arose during the Seminar.

Timetables for the two weeks are shown in Annex I.

2.4 The Local Organizing Committee

This Committee, which consisted of a senior administrative officer of the Commonwealth Department of Health and two dentists, had been appointed about a year prior to the Seminar. The members dealt with all the matters involving local action in Adelaide prior to the Seminar. The Committee did much in arranging for the accommodation, physical facilities at the site of the Seminar and the preparation of the initial timetable. It also assisted the participants and Faculty in many ways. Much of the smooth and successful functioning of the meeting was due to the excellent work done by this Committee.

2.5 Clerical and Reporting Staff

The Department of Health of the Commonwealth Government, through its Senior Administrative Officer in South Australia, Mr. A.S.W. Arnold (who was also a member of the Local Organizing Committee), provided typing staff for the Faculty, and a staff officer, stationery, machines and office facilities. Reporting staff of the Commonwealth Hansard staff took verbatim reports of all plenary session proceedings and provided copies at short notice for staff and faculty members.

2.6 The Seminar Director

On the recommendation of the Australian Dental Association, WHO/WPRO appointed Mr. G. S. McDonald, formerly Deputy Director of Education in South Australia, as Seminar Director. This followed the procedure adopted in New Zealand where an educationalist was appointed to a similar position. Mr. McDonald acted as chairman of all plenary sessions and generally supervised the work of the discussion groups and the clerical and reporting staff, as well as acting as the chairman of the Faculty.

2.7 The Faculty

This consisted of the Seminar Director, three consultants provided by WHO/WPRO, two consultants provided by the Australian Dental Association and the Dental Health Officer from Headquarters.

The Faculty met at least three times each day and participated very closely in all phases of the work of the Seminar. They planned the programme and timetable, assisted the Regional Public Health Administrator in the allotment of participants to discussion groups, guided the rapporteurs in the compilation of group reports and, with the co-operation of the resource officers, prepared consolidated reports on each topic. The highly competent and dynamic Faculty contributed much to the success of the Seminar. (For the names of the Faculty members and participants, see Annex II).

3. THE SEMINAR PROGRAMME AND PROCEDURE

3.1 Opening Ceremony

The Seminar was officially opened by the Minister of State for Health in the Commonwealth Government, Hon. D. A. Cameron, O.B.E., M.H.R. The Minister was accompanied by Mrs. Cameron and by the Assistant Director of the Commonwealth Department of Health, Dr. H. E. Downes.

Other speakers were the Vice-Chancellor of the University, Mr. H. B. Basten; the WHO Regional Public Health Administrator, Dr. S. Falkland (on behalf of Dr. I. C. Fang, Regional Director of WHO/WPRO); and the President of the Australian Dental Association, Dr. Kenneth T. Adamson. The Seminar Director presided.

3.2 Working Papers

Ten working papers were prepared in advance (see 1.3) and distributed to participants. These formed the basis for the discussions. They dealt with four principal study fields, or topic areas, namely:

(1) Current techniques for the prevention and control of dental diseases;

(2) Dental health programme administration and personnel utilization;

(3) Methods for recording, surveying, evaluating and reporting dental conditions;

(4) Evaluation of present services and plans for the development of dental health programmes in the countries participating in the Seminar.

Condensed summaries of the working papers (with the exception of paper No. 10) are included as Annex V to this report.

Reference papers and supplementary reading matter were supplied for the use of participants and the library of the University Dental School was also made available.

One working paper (No. 10) consisted of a summary of reports submitted by participating governments on the progress in the field of dental health in the last five years.

3.3 Working Procedure

The working papers which were sent to participants prior to the meeting were prepared in direct relationship to Seminar study topics.

Each topic was introduced at a plenary session which lasted for approximately one and a half hours. The presentation was made by a panel of speakers, which consisted of the writers of the papers with a faculty member to sum up the presentation.

Prior to the presentation of each topic, the Faculty had prepared guidelines for the convenience of the rapporteurs in the discussion groups. This arrangement contributed considerably to the uniformity of reporting and facilitated the work of the resource officers.

The participants at the Seminar were divided into four Discussion Groups (Annex III). Each group discussed the topic and produced findings, comments and recommendations. One member of each group was appointed a rapporteur by the Faculty. The rapporteur was changed for each topic. His duty was to note the important points during the discussions and prepare a group report. These four group reports were reproduced and copies distributed to all participants, so that at the end of the topic discussion each participant received the reports of his own and each of the other three groups.

These reports were also made available to a resource officer appointed by the Faculty, whose duty was to make a draft consolidation of the four reports, containing the important sections of each and avoiding duplication. This was then referred by the resource officer to the Faculty and together they prepared a draft consolidated report which was reproduced and distributed to faculty members and participants on the same evening.

The following morning this draft report was considered by the whole Seminar in the plenary session and either adopted, amended or improved. The final consolidated report was then duplicated and distributed. This was the pattern followed with each of the four topics.

Much of the work of consolidation was completed in the early evenings. The speed and accuracy with which these reports were prepared, typed and duplicated is a tribute not only to the painstaking and skillful work of the Faculty, but to the loyal co-operation of the typing staff provided by the Government of Australia.

The programme for the presentation of each of the topics and the four consolidated reports are published in the body of this report.

3.4 Film and Special Topic Sessions

Several sessions, generally in the afternoon, were set aside for film showings or discussions of special topics. Films viewed included: "So They Did Eat", depicting the hunting and eating habits of the Australian aboriginal, and "Let's Keep Our Teeth". Slides were shown on periodontal disease (Professor Waerhaug), on dental caries (Professor Campbell), and on the training of dental nurses and dental health education in Malaya (Dr. Sundram).

3.5 Closing Session

The last session of the final day was devoted to comments from the participants concerning the Seminar and a summing up of the Seminar's work by the Director.

3.6 Presentation of the Seminar Highlights at the 15th Australian Dental Congress

On 27th February, closing day of the 15th Australian Dental Congress, a forty-five-minute summary of the highlights of the Seminar was given by the following members of the Faculty and a participant:

Topic I — "Current techniques for the prevention and control of dental diseases" - Professor J.P. Walsh

Topic II — "Dental health programme administration and personnel utilization" - Dr. R. Harris

Topic III — "Methods for recording, surveying, evaluating and reporting dental conditions" - Dr. D.J. Galagan

Topic IV — "Evaluation of present services and plans for the development of dental health programmes in the countries participating in the Seminar" - Professor J. Waerhaug

4. EVALUATION

At the end of the first week, participants were asked to make an interim evaluation of the Seminar and an analysis of this was communicated to them during the second week. A final evaluation was made at the end of the Seminar. Details concerning these evaluations and comments on the findings are given as Annex VI.

5. SOCIAL FUNCTIONS

The Seminar was essentially a time of concentrated and hard work. A number of social functions, however, served to lighten the work of the Seminar and to give participants opportunities of meeting citizens of Australia.

Receptions were given by the Minister of State for Health and Mrs. Cameron; the Deputy Chancellor, Vice-Chancellor and members of the University Council; the United Nations Association, South Australian Branch; the President of the Australian Dental Association; the President of the 15th Australian Dental Congress; and the Lord Mayor of Adelaide. The hospitality of many private homes was enjoyed, and several weekend excursions into the country were arranged.

6. PUBLICITY

There was an excellent press and radio coverage of the Seminar, both before and during its proceedings. This was due to the excellent co-operation of the press, to the very good relations established by the Local Organizing Committee, and to the happy and fruitful contact between the various public relations organizations and the WHO Area Representative who handled publicity throughout the Seminar. Contact was made with the "Advertiser" (morning paper), "The News" (evening paper), "The Sunday Mail" (Sunday paper) and the Talks Department, News Department and Science Commentary Department of the Australian Broadcasting Commission.

Through these media press articles were sent to related press associations throughout Australia and New Zealand. Similarly, broadcasts were sent to other cities for rebroadcast as well as over the Australian network of the ABC. The material was also beamed by short wave to South-East Asia and the Pacific Islands.

Recorded talks on dental health or the Seminar (for broadcast) were arranged as follows: Professor Walsh (New Zealand), Dr. Galagan (U.S.A.), Professor Waerhaug (Norway), Professor Campbell (South Australia), Dr. Tay (Singapore), Dr. Manchanda (India), Dr. Vosailagi (Fiji), Dr. Ellerton (Fiji), Dr. Balendra (Ceylon), Dr. Tuat (Vietnam - in French), Miss Thin (Vietnam - in English), Dr. See (Thailand), Dr. Karim (Malaya), Dr. Eustaquio (Philippines). Miss Thin also recorded a broadcast on conditions and customs in Vietnam, and Dr. Vosailagi recorded a broadcast about the Seminar in Fijian for beaming in Fiji.

Press interviews were arranged with Mr. McDonald, Dr. Galagan, Professor Campbell, Professor Walsh, Dr. Falkland and many of the participants.

The following gave formal talks:

Professor Walsh, New Zealand	-	to local organizations including Rotarians.
Dr. Rice, WHO Headquarters	-	to the South Australian Division of the United Nations Association of Australia.
Dr. Karim, Federation of Malaya	-	to St. Peter's Church of England School.
Dr. Allwright, Hong Kong	-	-ditto-
Dr. Balendra, Ceylon	-	to Asian Society.

7. ACKNOWLEDGEMENTS

During the last plenary session, concluding the work of the Seminar, acknowledgements were made to the following for the very great help they had given to make the Seminar a success:

The Minister of State for Health, Hon. D. A. Cameron, and the officers of his Department in Canberra and South Australia

The United States Public Health Service for making available Dr. Donald J. Galagan

The Regional Director of the World Health Organization Regional Office for the Western Pacific, Dr. I.C. Fang; the Dental Health Officer of WHO Headquarters, Geneva, Dr. F. Bruce Rice; the Regional Public Health Administrator, Dr. S. Falkland; and the WHO Area Representative in Australia, Dr. J. M. Cruikshank

The Australian Dental Association and the 15th Australian Dental Congress

The Chancellor, Vice-Chancellor and Council of the University of Adelaide

The University of Oslo, Norway, for making available the services of Professor Jens Waerhaug

The following consultants to the Seminar:

Professor John P. Walsh
Professor T. D. Campbell

Seminar Director, Mr. G. S. McDonald

The South Australian School of Mines and Industries

The Council of St. Mark's and St. Anne's Colleges

The United Nations Association, South Australian Branch

The Australians for their warm reception and hospitality

The Hansard staff and the administrative and secretarial staff of the Commonwealth Department of Health, South Australian Branch

8. TOPIC PROGRAMMES

Topic I* Tuesday, 10 February, 11 a.m.

"Current techniques for the prevention and control of dental disease".

The discussion will be based on three working papers:

i) Methods for the prevention and control of dental diseases, particularly periodontal diseases, which can be applied by a dental health service.

Professor Jens Waerhaug of Norway. Working paper No. 2.

ii) Food and dental health. A study of some basic factors as seen in the Australian aboriginal.

Professor T.D. Campbell of Australia. Working paper No. 9.

iii) Health education of the public for dental health.

Dr. C.J. Sundram of Malaya. Working paper No. 5.

Summary and guiding lines for discussion groups.

Professor John P. Walsh of New Zealand.

Guiding Lines for Discussion Groups

Topic I Causes of periodontal disease.

Prevention of periodontal disease.

Conclusions to be drawn from a study of the aboriginal.

The objectives of dental health education.

The techniques of dental health education.

Rapporteurs for Topic I

Group 1. Dr. L.R.A. Williams
Group 2. Dr. D.M. Ellerton
Group 3. Dr. Mook Qui Wong
Group 4. Prof. K.J.G. Sutherland

Resource Officer: Dr. J.B. Bibby

---

*This is a true copy of the Topic I programme given to the participants.

Note: Discussion groups should complete their examination of the Topic by 12.30 p.m. on Wednesday, 11 February.

The next session, 2-3.30 p.m., should be devoted to deliberation on the rapporteurs' reports, which should in general follow the guiding lines. The final draft of these reports must be handed to the Resource Officer not later than 3.30 p.m. on Wednesday. The Faculty will meet with the Resource Officer at 3.45 p.m. on Wednesday to prepare a consolidated report for the Plenary Session on Thursday morning at 9 a.m. Rapporteurs should ensure that their reports occupy preferably not more than two foolscap pages. Highlights, recommendations and resolutions only should be included. The consolidated report and a copy of each group report will be distributed to participants prior to the Plenary Session.

Faculty members appointed to Groups for Topic I

Group 1. Professor T.D. Campbell
Group 2. Professor D.J. Galagan
Group 3. Dr. F. Bruce Rice
Group 4. Professor J. P. Walsh

Other members of the Faculty will circulate among groups.

* * * * *

Topic II Thursday, 12 February, 11 a.m.

"Dental health programme administration and personnel utilization".

The discussion will be based on three working papers:

i) Guiding principles in the organization and administration of a dental health service.

Dr. D.J. Galagan of the U.S.A. Working paper No. 8.

ii) The role of the profession in a dental health service.

Professor J.P. Walsh of New Zealand. Working paper No. 1.

iii) The role of the auxiliary personnel in a dental health service.

Dr. Hassan Abdul Latif. Working paper No. 3. Presented by Dr. Abdul Karim of Malaya.

Summary and guiding lines for Discussion Groups.

Dr. F. Bruce Rice of WHO, Geneva

Guiding Lines for Discussion Groups.

Topic II What is an adequate dental health programme?

Evolution of the programme.

Financing of a dental health programme.

Role of the profession in the programme.

Role of the auxiliary personnel in the programme.

Rapporteurs for Topic II

Group 1. Dr. K.T. Adamson
Group 2. Dr. A.J. Hoole
Group 3. Dr. W.C. Allwright
Group 4. Dr. B.A. Collins

Resource Officer: Dr. Robert Harris

/Editorial note:

The procedure (and timetable) to be followed by Discussion Groups, Rapporteurs and Resource Officer has not been reproduced here in order to avoid repetition. It was essentially the same as for Topic I (see page 10)./

Faculty members appointed to Groups for Topic II

Group 1. Dr. F. Bruce Rice
Group 2. Professor J.P. Walsh
Group 3. Professor T.D. Campbell
Group 4. Professor J. Waerhaug

Other members of the Faculty will circulate among groups.

* * * * *

Topic III Monday, 16 February, 9 a.m.

"Methods for recording, surveying, evaluating and reporting dental conditions".

The discussions will be based on three working papers:

i) Present status of reporting dental diseases and recommendations on means for their standardization.

Dr. D.J. Galagan of the U.S.A. Working paper No. 7.

ii) Methods for making a dental health survey and reporting the results.

Dr. Keijiro Takagi of Japan. Working paper No. 6.

iii) Evaluating a dental health service.

Dr. G.H. Leslie of New Zealand. Working paper No. 4.

Summary and guiding lines for Discussion Groups.

Dr. D.J. Galagan.

Guiding Lines for Discussion Groups

Topic III Purposes of measuring dental diseases.

Indices for selected dental diseases.

Standardization of procedure.

Processing and reporting of data.

Evaluation of dental health and dental services.

Rapporteurs for Topic III

Group 1. Dr. J.N. Harcus
Group 2. Dr. A.A. Jaffe
Group 3. Dr. J.S. Walker
Group 4. Dr. N.E. Goldsworthy

Resource Officer: Dr. N.D. Martin

/Editorial note:

The procedure (and timetable) to be followed by Discussion Groups, Rapporteurs and Resource Officer has not been reproduced here in order to avoid repetition. It was essentially the same as for Topic I (see page 10)./

Faculty members appointed to Groups for Topic III

Group 1. Professor J. Waerhaug
Group 2. Dr. F. Bruce Rice
Group 3. Professor J.P. Walsh
Group 4. Professor T.D. Campbell

Other members of the Faculty will circulate among the groups.

* * * * *

Topic IV "Evaluation of present services and plans for the development of dental health programmes in the countries participating in the Seminar".

The discussions will be based on Working Paper No. 10.

Summary of the accomplishments in dental health in the Western Pacific and South-East Asia area during the last five years.

Professor Jens Waerhaug of Norway.

The topic will be initiated by a panel with Professor Waerhaug as moderator and the following members: Dr. K.T.Adamson (Australia), Dr. J.C. Manchanda (India), Dr. R.C. Soemantri (Indonesia), Dr. D.M. Ellerton (Fiji).

Guiding Lines for Discussion Groups

1. Achievements in dental health in the participating countries during the last five years.

   Organization and administration of the programme.

   Services available:

   (a) Curative
   (b) Preventive
   (c) Health education
   (d) Research

2. Major dental health problems at present facing the participating countries.

3. Dental health plans of the participating countries.

Rapporteurs for Topic IV

Group 1. Dr. F.L. Ramirez
Group 2. Dr. Cheah Cheng Kooi
Group 3. Dr. See Sirisinha
Group 4. Dr. S.S.P. de Jong de Silva

Resource Officers (2): Dr. N.H. Andrews and
Dr. C.J. Sundram

/Editorial note:

The procedure (and timetable) to be followed by Discussion Groups, Rapporteurs and Resource Officer has not been reproduced here in order to avoid repetition. It was essentially the same as for Topic I (see page 10)./

Faculty members appointed to Groups for Topic IV

Group 1. Dr. D.J. Galagan
Group 2. Professor T.D. Campbell
Group 3. Professor Jens Waerhaug
Group 4. Dr. F. Bruce Rice

Other members of the Faculty will circulate among groups.

9. FINAL CONSOLIDATED REPORTS AND RECOMMENDATIONS

CONSOLIDATED REPORT - TOPIC I

CURRENT TECHNIQUES FOR THE PREVENTION AND CONTROL OF DENTAL DISEASE

A. Causes of periodontal disease

Periodontal disease may result from several etiological factors acting singly or in combination. These factors may be classified under:

1. General

a) Systemic disturbances such as diabetes, pregnancy and blood dyscrasias;

b) Lowered resistance due to worm infestation, latent malaria and undetected tropical diseases;

c) Malnutrition and avitaminosis commonly associated with inadequate or unbalanced diets;

d) A racial factor may be involved in the etiology of periodontal disease.

2. Local

a) Irritation associated with bacterial plaques and calculus in unclean mouths. The bacterial plaque is considered to be the most important local factor;

b) Mechanical irritation, especially that caused by poorly contoured restorations, ill-fitting partial dentures and primitive cleaning methods;

c) Chemical irritation, as encountered in betel chewing and heavy smoking of tobacco;

d) Traumatic occlusion, sometimes associated with malocclusion and the loss of teeth.

B. Prevention of periodontal disease

The following measures for the control of periodontal disease are recommended:

1. Personal oral hygiene is the major factor in the control of periodontal disease. Oral hygiene is practised in various forms in different countries with further variations between urban and rural areas. In the urban areas the approach is towards western standards where a high proportion of the population uses tooth-brushes. In rural areas some brushing is practised but more primitive techniques are frequently used.

2. The need of cleaning the lingual and interproximal surfaces as well as the vestibular should be emphasized.

3. Pending investigations into the various methods and their value, the use of tooth-brushes should continue to be recommended.

4. Oral prophylaxis should be given at an early age in conjunction with the teaching of oral hygiene.

5. All calculus should be removed.

6. Regular dental care from an early age should be made available, particularly among racial groups susceptible to periodontal disease.

7. High standards of restorative dentistry should be provided.

8. Occlusal disharmony should be rectified when necessary and feasible.

9. Malnutrition should be eliminated and general health improved by provision of better health services, and in this there must be co-operation between government authorities and the medical and dental professions.

10. Greater emphasis in the teaching at dental schools of the latest advances in periodontics is strongly recommended.

C. Conclusions to be drawn from a study of the Australian aboriginal

The Australid when living his own natural way of life has little dental caries, and a well-functioning dentition with healthy supporting structures. This healthy mouth results from:

1. Detergent action of food.
2. Vigorous masticatory function.
3. Food eaten in its raw natural state.
4. Comprehensive range of essential nutrients with little sugar.

By analogy, it would appear that (a) a balanced diet and (b) use of fresh uncooked fruits and vegetables requiring vigorous mastication could well improve the dental condition of modern man.

D. The objectives of dental health education

Dental health education is concerned with people, with changing their knowledge, feelings, habits and attitudes in order to develop those dental health practices which will bring about the best possible state of well-being. In considering who should receive this education, the following priorities are recommended:

1. The dental profession

The dental services in any country should develop a dental health education programme for its officers and, in association with dental schools, undertake the responsibility of informing the dental profession in the objectives and methods of dental health education and encourage them to practise these.

2. Allied health and welfare organizations

Health personnel and school teachers should take their part in dental health education as a bridge between the profession and the public.

3. The public

(a) In a community or nation an awareness of its dental needs should be aroused.

(b) A community should be informed of scientific facts concerning the seriousness of dental disease.

(c) The fears and prejudices concerning dentists and dental treatment should be removed.

(d) People should be motivated through (i) fear of consequences, (ii) aesthetics, (iii) dental experience and (iv) prestige in order to promote positive action towards dental health.

(e) It is essential that as the scope and effectiveness of dental health education increases, adequate provision for dental treatment should be made.

E. The techniques of dental health education

Existing audio-visual methods such as films, exhibitions, television, radio, posters and tape-recordings are considered effective means of mass communication.

Group participation in discussions and projects offers a valuable means of stimulating interest in dental health.

Dental health should be included in the normal curriculum of all schools. Hygiene textbooks should include a section on dental health. All educational material should be on a level consistent with the literacy of the population in order to effect proper understanding. It is emphasized that research into the application of new methods of dental health education is desirable.

F. Recommendations

1. Because of the significant international health problems created by periodontal diseases, it is recommended that the World Health Organization should support to the fullest extent possible a series of studies into the prevalence, severity, causes and character of these diseases.

2. Periodontics should be made one of the major subjects in the curriculum of dental schools and separate departments of periodontics should be established.

3. Elementary periodontics should be made part of the curriculum of dental nurses' training schools.

4. The dental profession should be made aware of its responsibility actively to practise periodontics.

5. Because of the need for improvement in methods of dental health education, it is recommended that investigations be carried out by participating countries into the basic principles of mass education, and their implementation.

6. An investigation should be made into the efficacy of oral hygiene methods of primitive peoples and an intense campaign should be organized to institute methods of interproximal cleansing.

7. Encouragement should be given to research applied to dental health in primitive communities.

8. International agencies such as the World Health Organization should take the initiative in drawing up a general classification of the needs for dental health education together with a range of methods suitable for use in various countries. Approval in principle and implementation when the funds are available should then be recommended to various governments.

9. Dental schools should include in their curriculum for undergraduates a course in the principles of dental health education.

CONSOLIDATED REPORT - TOPIC II

DENTAL HEALTH PROGRAMME ADMINISTRATION AND PERSONNEL UTILIZATION

A. What is an adequate dental health programme?

1. An adequate dental health programme is one which provides the best educational, preventive and clinical dental service commensurate with the socio-economic level and professional development within a country. Such a programme may be provided by a public dental health service in collaboration with private practitioners.

2. The programme should consist of six basic components:

   (a) Leadership in professional development;

   (b) Public health education and information;

   (c) Application of preventive procedures;

   (d) Provision of direct care of a remedial or corrective nature;

   (e) Research activities;

   (f) Training of personnel.

3. Priorities in the application of these components will vary from country to country. The following criteria are important in the planning of a dental health programme:

   (a) Size and seriousness of the problem;

   (b) Feasibility of the proposed programme;

   (c) The number of people who will benefit from its implementation;

   (d) Its potential for expansion and development;

   (e) Its public relations or political values;

   (f) The needs of the population in relation to (i) age groups, (ii) geographic isolation, (iii) state of general health, (iv) economic status.

4. A written plan of integrated long, intermediate and short-term objectives should be established.

5. Provision should be made for programme evaluation with subsequent changes and revisions when indicated.

B. Evolution of the programme

It is believed that a dental health service will evolve along the following lines:

1. Professional leadership in the initial selection and appointment of a director of the public dental health services who shall be a qualified dentist and responsible to the Director-General of Health or his equivalent.

2. A general assessment by competent and trained dental officers of the country's dental needs and resources.

3. Provision of remedial treatment in relief of pain and oral sepsis.

4. Provision of treatment to priority groups in conjunction with initial preventive and educational measures.

5. Extension of the service to include greater numbers with parallel extensions of educational and preventive services.

6. Increased range of treatment and participation in and support of dental research activities.

7. Increased personnel achieved by:

   a) facilities for the education and training of dentists;

   b) facilities for training auxiliaries;

   c) provision and encouragement for increasing personnel, if necessary through financial assistance.

8. As the programme develops, facilities should be made available for post-graduate study.

It is accepted that the development of the programme will be influenced by the provision of adequate finance and the nature and number of personnel available. It is accepted that the development of the dental profession is of primary importance. It is also strongly suggested that, with the establishment of training centres in any country, every endeavour should be made to obtain the necessary legislation to restrict the practice of dentistry to trained personnel.

C. Financing of dental health programme

1. The methods adopted for meeting the costs of dental services vary widely from one country to another depending upon the type of services given and the political philosophy of the country. The responsibility for bearing the cost of any public dental health programme should rest with the Government, since it is an essential part of the health services of a country.

2. Dental health programmes provide two types of service:

   a) Personal where (i) the individual pays all the costs or (ii) the individual pays part of the cost, the balance being met either by compulsory insurance, voluntary insurance, government subsidy, employer, union or philanthropic organizations, or (iii) services provided without charge to the individual;

   b) General, such as (i) dental education, (ii) research, (iii) dental health education of the community, (iv) community preventive programmes.

   Finance for these general services may be provided from either government or institutional sources.

3. Allocation of finance from any source will be greatly strengthened by increasing the awareness of the whole population - especially political, civic and health organizations - of the importance of dental health to the community.

4. Surveys have shown that members of the public collectively place a much lower value on dental health than they do individually. This strong potential interest in dental health should be developed in support of increased finance for the public phases of the dental health programme. National dental associations should assist in this development.

D. Role of the profession

1. The dental profession and the government share joint responsibility for the establishment and organization of a dental health programme and experience has shown that when there is full collaboration between the public health authority and the dental profession, the highest standards of service are provided.

2. Personal dental services should be performed by qualified dentists, but in under-developed countries the use of the particular type of partly-trained dental practitioner mentioned in the report of the WHO Expert Committee on Auxiliary Dental Personnel (WHO Techn. Rep. Ser. 163)(see page 26 of that report) has proved a satisfactory initial means of providing dental services.

3. The profession must be prepared to work not only in private dental practice, but also in hospitals and children's clinics, to treat priority groups, to train and work with auxiliaries, and to advocate and support preventive measures such as fluoridation and dental health education.

4. The profession must encourage the maintenance and improvement of their numbers wherever possible.

5. The profession should seek to encourage free interchange of staff between schools of various countries.

6. The members of the profession should take an active part in the political, social and cultural life of their community.

E. The role of the auxiliary personnel in the programme

1. Definition. The definition of auxiliary dental personnel in the report of the Expert Committee (WHO Techn. Rep. Ser. 163) which is as follows, is accepted:

> "The members of the various dental auxiliary groups will be defined in the body of the report as those individuals who are subject to the supervision and direction of trained professional personnel (i.e., dentists); in other words, they are the auxiliary personnel for whose operations and acts their supervisor, the dentist, is responsible."

It follows, therefore, that auxiliary personnel cannot be used unless dentists are available for their supervision and control.

2. The role of the auxiliary personnel is to provide the dentist with assistance that will relieve his own hands and his own time so that he may devote himself more fully to performing those professional services that specifically require his special skill and knowledge. (Refer to WHO Techn. Rep. Ser. 163).

3. Dental auxiliaries cannot be used to their fullest advantage unless the dental profession is trained to work with them.

4. The duties and status of dental auxiliaries must be clearly defined and responsibility for their work should rest with the supervising dentists. School dental nurses should be trained by the government for use in the public health services only, in accordance with the principles defined in the "Report on the New Zealand Dental Health Seminar", 1954.

F. Recommendations

1. It is recommended that a higher proportion of public health and welfare expenditures should be allocated by governments to dental health services (at present this is far too low in most of the countries represented at the Seminar) and that dental leaders should impress upon the State authorities the importance of dental health in general health and welfare.

2. It is recommended that provision must be made in each country for the continuing education of the dental profession, especially the "dental licentiate", so that their standards progress in keeping with the development of the country and its health services.

3. It is recommended that governments of member countries should make more use of the facilities of WHO for training of dental teachers, dental public health administrators, dental research workers and dental specialists.

4. It is recommended that the dental profession in well-developed countries should make more use of auxiliaries and of the dental team system. Attention should be given not only to the training of auxiliary personnel, but also to the education of dentists in using their services more effectively.

5. It is recommended that surveys of dental needs should be carried out in the participating countries, if necessary with WHO support and assistance.

6. It is recommended that curricula in public health dentistry should be established at graduate schools of public health in selected universities in South-East Asia and the Western Pacific, if necessary with WHO support and assistance.

CONSOLIDATED REPORT - TOPIC III

METHODS FOR RECORDING, SURVEYING, EVALUATING AND REPORTING DENTAL AND ORAL DISEASES AND CONDITIONS

A. Purposes of measuring dental and oral diseases and conditions

1. Planning and evaluation of dental health programmes:

   (a) To determine the type, extent and relative severity of dental diseases and conditions in a population, as a basis for the development and expansion of dental health service.

   (b) To determine periodically the overall effectiveness of the service in relation to the pre-determined objectives.

   (c) To estimate the personnel required to provide a dental health service.

   (d) To estimate the cost of dental health services.

   (e) To give governments positive information concerning the need for and the progress of dental health programmes.

   (f) To stimulate and maintain public awareness of the importance of dental health.

2. Research activities:

   (a) To gain an understanding of where, when and under what conditions dental and oral diseases and abnormalities occur.

   (b) To compare the occurrence of dental disease between different countries and groups.

   (c) To facilitate the exchange of information between countries.

   (d) To study the relations between dental and general diseases.

   (e) To investigate causes of dental disease and to evaluate preventive and control measures.

B. Indices for selected dental and oral diseases and conditions

1. Acceptable indices should be:

   (a) simple

   (b) reproducible

   (c) quantifiable (capable of being expressed numerically)

   (d) analysable

   (e) meaningful as clinical concepts.

2. Dental conditions fall into three groups:

   (a) Those which can be reported by simple enumeration, e.g., oral cancer.

   (b) Those for which indices have been established on satisfactory bases - (i) dental caries (ii) periodontal disease (iii) fluorosis.

   (c) Those for which there are as yet no satisfactory indices, e.g., oral hygiene, malocclusion.

3. Dental caries index

   The DMF and def indices have been used satisfactorily for many years, and should be adopted internationally. These indices may be used at three levels of refinement:

   (a) Comprehensive - suitable for detailed research purposes. The tooth surface provides the unit of measurement.

   (b) Intermediate - suitable for planning and evaluation of most public health programmes and for epidemiological studies. The individual tooth provides the unit of measurement.

   (c) Simple - suitable for rapid surveys of prevalence and for dental health programme planning and evaluation. The person is the unit of measurement. A working estimate of the average number of DMF teeth is derived from the percentage of persons affected.

4. Index for periodontal disease

   Several techniques have been advanced for the assessment of periodontal disease. However, the Russell Index seems at present to be the most practical, simple and effective index

for general use in epidemiological investigations. Field studies by other workers have indicated the possibilities of modification and improvement and these efforts should be encouraged and expanded.

5. Index for fluorosis

Dean's Index for dental fluorosis is acceptable. In its application, it is important to differentiate between the milder forms of dental fluorosis and non-fluoride enamel opacities.

6. Index for oral hygiene

An index for classifying oral hygiene recently has been developed by Greene and Ramfjord, but a decision cannot yet be made as to its usefulness.

7. Index for malocclusion

There is a need for a satisfactory index.

C. Standardization of procedures

1. Standardized procedures should result in findings which are reproducible, internationally comparable and have a known level of accuracy.

2. Standardization is essential in regard to:

(a) Terminology used in describing conditions to be recorded.

(b) Training and periodic calibration of examiners, locally and internationally.

(c) Equipment, so that examinations may be made under uniform conditions.

(d) Record forms to simplify and unify methods of recording examinations.

3. Attempts to refine the accuracy of methods used often result in the introduction of error. In mass surveys, consistency in reporting is of more importance than refinement of technique.

D. Processing and reporting data in dental disease

1. Statistical advice should be sought in the planning stages of the survey and the data processed according to accepted statistical methods.

2. The data should be checked, sorted and arranged in tabular form in accordance with the predetermined statistical requirements of the survey.

3. The purpose of the project should be stated in the report, the materials and methods used should be described in detail, and the procedure for sampling and analysis should be outlined. Vague and ambiguous terms should be avoided.

4. The report should include the basic data as an appendix so as to enable others to make independent analyses.

5. The report must contain the specific distribution of the individuals examined in the survey, classified according to age (preferably according to last birthday), sex, race and where appropriate, by religion.

E. Evaluation of dental health and dental services

1. Dental health

(a) In the final analysis, dental health programmes must be evaluated in terms of their effect on dental disease.

(b) The prevalence and incidence of dental disease in any community must be measured by the use of standardized procedures in (i) initial survey to establish needs, (ii) subsequent periodic surveys to establish effectiveness and results of the dental health programme.

(c) The effectiveness of the programme to control dental caries can be determined by analysis of the components of the DMF index.

2. Dental services

(a) Periodic evaluation of programmes is essential if the progress towards a predetermined goal is to be assessed. The plan of the dental health programme should be sufficiently flexible to permit changes when evaluation reveals them to be necessary.

(b) The value of the service should be estimated by reference to criteria which are realistic and are related to the extent of the dental health problem and the social and economic development of the country.

(i) Dental resources and economics

(1) ratio of dentists to population

(2) ratio of dentists to other health personnel

(3) distribution of dentists, rural/urban

(4) training programme and service conditions

(5) allocation of funds in relation to health and welfare generally

(6) cost per person treated and cost per head of population.

(ii) Socio-political

(1) balance of priorities within the approved dental health programme

(2) satisfaction with service by the government and by the people.

(iii) Factors influencing effectiveness

(1) dental educational standards

(2) integrity and efficiency of personnel

(3) balance in the provision of preventive services, dental health education and research, in relation to restorative services.

F. Recommendations

1. It is recommended that studies be made of the applicability of the DMF conversion table in determining the "working estimate" to other countries, particularly those in South-East Asia and the Western Pacific (vide Working Paper No. 7 by Dr. D. J. Galagan).

2. It is recommended that the efforts of the special committees of the FDI on standardization of nomenclature and indices should be continued and intensified.

3. It is recommended that further work be done to refine and improve indices for measuring all dental diseases and conditions other than dental caries. Formulation of a satisfactory index for malocclusion is especially recommended.

4. It is recommended that schemes for training competent workers in dental epidemiology should be instituted on an international basis with the granting of fellowships to support them.

5. It is strongly recommended that the participating countries make immediate use of those indices which have been accepted by this Seminar.

The following are definitions of the indices referred to under paragraph 5 of the recommendations on Topic III:

DMF INDEX

Within certain age limits (from 6 to 25) the DMF index approaches a true measure of the total caries experience in permanent teeth for an individual or a population. This index usually is expressed as the average number of decayed (D), missing (M) and filled (F) permanent teeth, or tooth surfaces, or both, per person or per number of teeth erupted.

The DMF index for a community usually is expressed as an average number of DMF teeth per person examined. Whether the base of the measurement is persons or teeth, the data can be analysed for measures of central tendency and dispersion. When compiled to express survey findings for a population group, DMF averages must be reported for discrete age groups and frequently for a specific sex and race. This method of compilation enables direct comparison of levels of caries experience for different communities and eliminates the need for detailed consideration of tooth eruption patterns which are relatively standard within given age-race-sex groups.

From the identification of the three separate components (D, M & F) it is possible to determine the ratio of decayed and of filled permanent teeth and of tooth loss (teeth already extracted and those indicated for extraction due to caries) to the total number of teeth attacked by caries. Thus, estimates of dental treatment given (F) and maximal treatment needs (D) in a community may be obtained from these components.

An attack of caries results in a permanent tooth that is:

(D) Decayed - tooth has one or more unfilled carious lesions

(M) Missing - tooth has been extracted because of caries or needs to be extracted because of caries*

(F) Filled - tooth has one or more sound fillings**

D + M + F equals the total number of teeth (or surfaces) attacked by caries.

- - - - - -

* The (M) classification may be subdivided into: M_e - extracted previously and M_i - extraction indicated.

** The investigator may identify a new attack of caries in a tooth that has one or more sound fillings by "Decayed and Filled (DF)".

def INDEX

Similar information about the deciduous dentition (which should be considered separately from the permanent teeth) can be identified by obtaining the number of decayed (d), indicated for extraction (e) and filled (f) primary teeth for each individual examined. The only difference between the measure known as def deciduous teeth and the concept embodied in the expression of the number of DMF permanent teeth lies in the assessment of deciduous tooth loss because of caries. Since at the time of examination it is difficult to determine whether a missing deciduous tooth was exfoliated normally or lost prematurely because of caries, the "e" component of the def index represents only the number of primary teeth indicated for extraction. Otherwise, the principle of the def index for primary teeth is the same as the DMF for permanent teeth.

An attack of caries results in a deciduous tooth that is -

(d) Decayed - tooth has one or more unfilled carious lesions.

(e)* Indicated for extraction - tooth is decayed beyond repair and needs to be extracted.

(f) Filled - tooth has one or more sound fillings**.

d + e + f equals the total number of teeth (or surfaces) attacked by caries.

- - - - -

* Deciduous teeth missing on examination are not counted because it is not possible to tell whether they exfoliated naturally or were extracted because of caries.

** The investigator may identify a new attack of caries in a tooth that has one or more sound fillings by "Decayed and Filled (df)".

RUSSELL INDEX FOR PERIODONTAL DISEASE

In the application of the Russell Index the clinical signs of marginal periodontitis are scored according to their progression - from inflammation to eventual loss of function. Each tooth unit is scored individually. Relatively little weight is given to gingival inflammation (as compared to the PMA) and relatively great weight to pathological bone destruction. Each tooth unity is assigned a score of zero for negative findings; one for mild gingivitis; two for gingivitis; four for radiographic evidence of an alveolar crest

resorption (when x-ray diagnosis is issued); six for gingivitis with pocket formation; eight for advanced periodontal disease destruction with loss of function. The score for the individual is the average of the scores for the teeth in the mouth and the population score is the average of the individual scores for the persons examined.

Russell's system is designed to place the greatest emphasis on advanced disease, and to minimize examiner error. Therefore, it will yield some under-estimation of the true level of periodontal disease in a population (this deficiency is true in any index which does not provide for microscopic tissue evaluation). It should be noted, also, that the index is a measure of morbidity (unlike the dental caries index) and does not necessarily represent the total lifetime experience of periodontal disease in a population.

Recently some modifications of Russell's approach have been proposed by Ramfjord. The proposed changes include a measurement of the depth of individual pockets from a fixed point, assessment of the conditions of tissues adjacent to six representative teeth and some change in the weighting values between gingivitis and destructive periodontal disease.

Russell's Periodontal Index

	Central	Lateral	Cuspid	Bicuspid 1st	Bicuspid 2nd	Molar 1st	Molar 2nd	Molar 3rd
Left	0	0	0	1	1	1	2	1
Right	X	1	0	0	0	0	0	1
Left	6	6	1*	0	0	X	X	0
Right	6	8	2	1	1	1	2	0

$$\text{Periodontal Index} = \frac{\text{Sum of individual scores}}{\text{Number of teeth present}} = \frac{43}{30} = 1.4$$

X = Tooth missing
* = Two teeth present in same space

INDEX FOR FLUOROSIS

Among the enamel opacities, endemic dental fluorosis may be quantitated and reported with a classification system developed by Dean and his co-workers. The fluorosis index provides for a numerical scoring of mottled enamel in the individual, based on the most severe clinical manifestation of the phenomenon noted in two or more teeth. The

severest form of fluorosis found on at least two teeth determines the child unit value. This figure is assigned a weight and put into a formula which yields a community fluorosis value.

By this method, the level of fluorosis experience can be expressed in a single figure for an entire community (i.e. those persons exposed to a common water supply). It has been used successfully for many years and its application, along with the DMF index, led to the understanding of the relationship between exposure to varying fluoride concentrations and dental caries and mottled enamel.

CONSOLIDATED REPORT - TOPIC IV

EVALUATION OF PRESENT SERVICES AND PLANS FOR THE DEVELOPMENT OF DENTAL HEALTH PROGRAMMES IN THE COUNTRIES PARTICIPATING IN THE SEMINAR

A. Achievements in dental health in the participating countries during the last five years

1. Administration of dental services

(a) The organization of dental services has definitely improved in some of the less developed countries. No marked change has occurred in the more highly-developed countries.

(b) There has been limited use of health insurance for financing dental services.

2. Research

Some research activities are evident in most of the participating countries in the form of epidemiological, clinical and laboratory studies.

3. Dental schools and dental education

In general, there has been an expansion of physical facilities, an increase in the intake of students, an improvement in standards of dental education and a greater emphasis on preventive dentistry.

4. Facilities for treatment

There have been considerable advances in some of the participating countries in the provision of facilities for dental treatment. These new facilities have included clinics in public health centres, hospitals and schools and, to a lesser degree, in private dental offices.

5. Dental health education

Increasing attention has been given to dental health education with particular reference to children, health workers, school teachers and others in charge of children. In some countries a national dental health week has been organized with success and in many countries dental health education committees have been established. Television has been used and it may prove to be a potent means of education in those countries which have it.

6. Fluoridation and topical application of fluorides

Increasing attention has been given to the fluoridation of communal water supplies. This important dental health measure has been instituted on a pilot project basis in several countries. In a limited number of areas fluoridation has been fully accepted and fluoridated water is reaching a significant number of people. Topical application of fluoride is now carried out as a routine procedure in the dental health services of several countries.

B. Major dental health problems at present facing the participating countries

1. Dental disease

In spite of the achievements in participating countries, the amount of untreated dental disease still constitutes a tremendous problem, which may vary with the state of social and cultural development, and is being intensified by the rapid growth of population. The major dental health problem in children is dental caries, which is aggravated by the increasing consumption of refined and readily fermentable carbohydrates. In some South-East Asian countries periodontal disease is the major problem in adults and the early stages are prevalent even among children. In some countries malnutrition is an important factor in the etiology of periodontal disease.

2. Administration of dental services

(a) In most Asian countries the dental educational institutions and public dental services are components of the total health programme and are placed under the general administration of the medical profession. This arrangement usually leads to dominance of the medically-trained personnel over the dental administration with the result that the dental programme is given a minimum amount of emphasis.

(b) The lack of a unified programme with central direction by dental personnel is a major problem in many countries.

(c) Dental legislation, although enacted in most countries, is not effectively enforced in the majority.

(d) Dental health services are severely restricted in all countries by the lack of finance.

3. Research

Lack of finance, facilities and adequately trained personnel constitute major problems in the conduct of research in all the participating countries.

4. Dental schools and dental education

The major problem is finance. The level of dental education should be aligned with the dental health needs of the country. Any attempt to raise too rapidly the standard of dental education in less developed countries has lowered the desire of prospective students to study dentistry. This problem is further aggravated by the fact that the economy of the country prevents the absorption of qualified personnel. In most countries the poor remuneration of the teaching staff in the dental schools creates a problem in attracting and retaining personnel of a sufficiently high calibre.

5. Facilities for dental treatment

The facilities for treatment vary greatly in different countries, and in general are insufficient to meet the demands and needs of the population. In part this situation may be due to:

(a) Insufficient funds to extend services;

(b) Lack of trained personnel;

(c) Difficulties in communications and in maintaining supplies;

(d) Uneven geographical distribution of dentists.

6. Dental health education

(a) There is a poor appreciation of dental health, especially in countries with a low level of literacy. This lack of appreciation results in apathy towards maintaining good dental health and insufficient financial support for public dental health programmes.

(b) The dental profession itself may be insufficiently aware of the need for dental health education.

7. Fluoridation

(a) In less developed countries the problems are:

(i) lack of suitable communal water supplies;

(ii) technical, associated with the introduction and maintenance of the proper concentration of fluoride;

(iii) insufficient trained personnel;

(iv) lack of finance.

(b) In other countries, the main problem is that proposals to fluoridate water supplies arouse vigorous opposition.

C. Dental health plans of the participating countries

In promoting dental health plans it is important at this stage to emphasize that forthright action is imperative. Discussion at this Seminar has been most stimulating and productive of sound recommendations. The immediate post-seminar period should be one of intense activity with the objective of implementing these recommendations. The following measures are included in the plans of participating countries:

1. Legislation to regulate the practice of dentistry.

2. The creation and extension of schools to train all levels of dental personnel including post-graduate training in public health administration.

3. The development of unified programmes controlled by a dental director who has reasonable autonomy.

4. Co-operation between the public dental service and the dental association in formulating and implementing a dental health programme.

5. Intensification of dental health education measures.

6. Extension of dental treatment by means of school dental services, clinics in health centres and hospitals, and dental benefit schemes.

7. Increased use of measures for the prevention and control of dental diseases.

8. Properly conducted surveys to evaluate dental problems and to determine the effectiveness of dental health programmes.

9. Legislation to enable the fluoridation of public water supplies to be implemented.

10. Increased efforts to train research workers, to expand research facilities, and to support investigations into the causes and characteristics of dental diseases.

D. Recommendations

1. It is recommended that the Divisions of Dental Health in the participating countries be granted that degree of administrative autonomy and freedom from medical dominance necessary to permit vigorous growth and expansion of the dental health service in accordance with the size and seriousness of the dental problem.

2. It is recommended that existing legislation be enforced to regulate and/or eliminate unqualified practice.

3. It is recommended that provision be made for additional training in fundamental science for selected students in schools of dentistry in order to develop a pool of graduates from which career research workers can be recruited.

4. It is recommended that greater attention be drawn to the implementation of the resolutions contained in the 1954 WHO/WPRO Dental Health Seminar report.

5. In view of the relatively slow development of dental health programmes as demonstrated by the evaluation of present services, it is recommended that governments of participating countries should make greater financial allocation for the public dental health services.

6. In view of the fact that lack of professional personnel is the critical problem restricting the expansion of dental health services in most of the countries represented, it is recommended that governments make specific allocation of funds to increase the recruitment into the profession by means of fellowships, scholarships, grants and bursaries.

10. GENERAL RECOMMENDATIONS

During the last plenary session of the Seminar on Friday, 20 February, participants formulated the following general recommendations:

1. It is recommended that the report of the Seminar be printed with selected photographs for distribution on a wide basis, not only to government organizations, but through dental associations, dental schools and hospitals.

2. It is strongly recommended that a post of Dental Health Officer be established in the Western Pacific Regional Office of WHO in order that continuing consultation on and assistance with dental health matters will be available to the member countries in the Western Pacific Region.

3. It is recommended that WHO should appoint to future seminars of the Organization some participants of its own choice, in addition to those nominated by member countries.

4. It is recommended that in future seminars, participants and faculty members should, if possible, be accommodated together in one building.

ANNEX I

DENTAL HEALTH SEMINAR - 1959

TIME TABLE

Time	Tuesday, 10 February	Wednesday, 11 February	Thursday, 12 February	Friday, 13 February	Saturday, 14 February
8.30 a.m. 9-10.30 a.m.	Pre-seminar formalities PLENARY SESSION 1. Opening ceremony 2. Conduct of the seminar 3. Announcements	Group discussions Topic I (cont'd.)	PLENARY SESSION Discussions: Group reports Topic I	Group discussions Topic II (cont'd.)	PLENARY SESSION Discussion Group reports Topic II
10.30-11 a.m.	Tea	Tea	Tea	Tea	Tea
11 a.m. 12.30 p.m.	PLENARY SESSION Presentation of Topic I	Group discussions Topic I (cont'd.)	PLENARY SESSION Presentation of Topic II	Group discussions Topic II (cont'd.)	Field visit or Reception
12.30-2 p.m.	Lunch	Lunch	Lunch	Lunch	Lunch
2.30 p.m.	Group discussions Topic I	Group discussions Topic I (concluded)	Group discussions Topic II	Group discussions Topic II (concluded)	Free time
3.30-3.45 p.m.	Tea	Tea	Tea	Tea	Tea
3.45-5 p.m.	Group discussions Topic I (cont'd.)	Special topic Discussion or Film projection Faculty meeting with Resource Officer	Group discussions Topic II (cont'd.)	Special topic Discussion or Film projection Faculty meeting with Resource Officer	Free time

SOCIAL FUNCTIONS

1. Tuesday, February 10th - 5.30-7.30 p.m.
   South Australian Hotel - Reception by the Minister of State for Health
2. Thursday, February 12th - 5.15 p.m.
   The George Murray Common Room at the University -
   Reception by the United Nations Association, S.A.Branch

Time	Monday, 16 February	Tuesday, 17 February	Wednesday, 18 February	Thursday, 19 February	Friday, 20 February
9-10.30 a.m.	PLENARY SESSION Presentation of Topic III	Group discussions Topic III (cont'd.)	PLENARY SESSION Discussion group reports Topic III	Group discussions Topic IV	PLENARY SESSION Discussion group reports Topic Iv
10.30-11 a.m.	Tea	Tea	Tea	Tea	Tea
11 a.m. - 12.30 p.m.	Group discussions Topic III	Group discussions Topic III (cont'd.)	Field visit or Projection of films or Special topic discussion	Group discussions Topic IV (cont'd.)	Special topic discussion
12.30-2 p.m.	Lunch	Lunch	Lunch	Lunch	Lunch
2-3.30 p.m.	Group discussions Topic III (cont'd.)	Group discussions Topic III (concluded)	PLENARY SESSION Presentation of Topic IV Special panel	Group discussions Topic IV (concluded)	PLENARY SESSION Seminar draft report Recommendations Evaluation
3.30-3.45 p.m.	Tea	Tea	Tea	Tea	Tea
3.45-5 p.m.	Group discussions Topic III (cont'd.)	Field visit Projection of film or Special topic discussion Faculty meeting with Resource Officer	PLENARY SESSION Presentation of Topic IV (cont'd.)	Film projection or Special topic discussion Faculty meeting with Resource Officer	PLENARY SESSION Resolutions Closing ceremony

SOCIAL FUNCTIONS

1. **Tuesday, February 17th - 8 p.m.**
   University Staff Club Room - Reception by the University of Adelaide

2. **Friday, February 20th - 7 p.m.**
   South Australian Hotel - Buffet dinner by the Australian Dental Association

ANNEX II

LIST OF PARTICIPANTS

WESTERN PACIFIC REGION

Australia	Dr. Kenneth T. Adamson Senior Lecturer in Orthodontics Dental School University of Melbourne	49 Mathoura Road Toorak, S.E.2 Victoria
	Dr. Norman H. Andrews Director of Child Health (Dental) Department of Health, Victoria	4 Collins Street Melbourne, C.1 Victoria
	Dr. Bernard A. Collins Dental Officer Commonwealth Department of Health	Department of Health Darwin
	Dr. Neil E. Goldsworthy Director, Institute of Dental Research United Dental Hospital of Sydney	Institute of Dental Research 2 Chalmers Street Sydney
	Dr. Robert Harris Head, Department of Preventive Dentistry United Dental Hospital of Sydney	United Dental Hospital 2 Chalmers Street Sydney
	Dr. Alfred J. Hoole Superintendent, Brisbane Dental Hospital and Adviser to the Government on Dental Clinics of Queensland	Brisbane Dental Hospital Turbot Street Brisbane Queensland
	Dr. Bernard Lilienthal Senior Research Fellow United Dental Hospital of Sydney	United Dental Hospital 2 Chalmers Street Sydney
	Dr. Noel D. Martin Associate Professor, Preventive Dentistry, University of Sydney	18 Woonona Avenue Wahroonga
	Professor Kenneth J.G. Sutherland Professor of Dental Science and Dean of Faculty University of Western Australia	179 Wellington St. Perth
	Dr. Laurence R.A. Williams General Private Practice	61 Collins Street Melbourne, Victoria

China	Dr. Pu Mao-yen Chief of the Third Section Kaohsiung City Health Center	Kaohsiung City Health Center Kaohsiung, Taiwan
	Dr. Wong Jee-lum Professor of Clinical Dentistry and Dean of Dental Faculty National Defense Medical Center	National Defense Medical Center P.O. Box TAI-0225 Taipei, Taiwan
Federation of Malaya	Dr. Abdul Karim Assistant Director Medical Services (Dental)	Ministry of Health Federal House Kuala Lumpur
	Dr. Chellie J. Sundram Principal (Dental Officer in Charge) Dental Nurses' Training School	Dental Nurses' Training School
	Dr. Teck Eng Tay General Private Practice	254 Orchard Road Singapore 9
Fiji	Dr. Deryk M. Ellerton Senior Dental Officer Medical Department	Medical Department Suva
	Dr. Ratu Immanuel L. Vosailagi Dental Officer Medical Department	Medical Department Suva
Hong Kong	Dr. Walter C. Allwright Dental Specialist Medical Department	Medical Department (Dental H.Q.) Tower Court Hysan Ave.
	Dr. Yap Jin-hwee Dental Surgeon Medical Department	24D Belcher Gardens Hong Kong
Japan	Dr. Seiichi Ochiai Lecturer, Department of Pedo- dontics, Tokyo Medical and Dental University	c/o Chief Liaison Officer Ministry of Health and Welfare Chiyoda-ku, Tokyo
	Dr. Keijiro Takagi Councillor on Dental Affairs Medical Affairs Bureau Ministry of Health and Welfare	-ditto-
	Dr. Mitsuharu Takeuchi Official, Health Section Elementary and Secondary Education Bureau, Ministry of Education (concurrently Lecturer, Tokyo Dental College)	-ditto-

Korea	Dr. Tae Suk Shim Associate Professor College of Dentistry Seoul National University	College of Dentistry 111 Sogong-Dong Chung-Gu, Seoul
	Dr. Hyon Chan Yoon Chief, Medical Service Section Ministry of Health and Social Affairs	Ministry of Health and Social Affairs Seoul
Netherlands New Guinea	Dr. Albert Stöpler Dental Surgeon, Netherlands New Guinea Petroleum Company	N.N.G.P.M. Hospital Sorong
New Zealand	Dr. J. Bruce Bibby Director, Division of Dental Hygiene, Department of Health	Department of Health P.O. Box 8006 Government Buildings Wellington
	Dr. Geoffrey H. Leslie Assistant Director, Division of Dental Hygiene Department of Health	-ditto-
Philippines	Dr. Delfin Almanzor Administrative Assistant Dentist I Medical Bureau (Hospitals)	Medical Bureau (Hospitals) Department of Health, Manila
	Dr. Cayetano R. Eustaquio General Private Practice	2619 Legarda Street Sampaloc, Manila
	Dr. Francisco L. Ramirez Dean and Professor Philippine Dental College	Philippine Dental College 2921 Nagtahan Cor. Sta. Mesa Blvd. Manila
Sarawak	Dr. James N. Harcus Dental Officer, Medical Department	Medical Department Kuching
Singapore	Dr. Cheah Chen Kooi Lecturer in Orthodontics Dental School	University of Malaya Singapore 3
	Dr. Mook Qui Wong Acting Chief Dental Officer Ministry of Health	Dental Centre Maxwell Road Singapore 2
Territory of Papua and New Guinea	Dr. David E. Barmes Dental Officer, Department of Public Health	Department of Public Health Port Moresby

U.S. Trust Territory of the Pacific Islands	Dr. Aaron A. Jaffe Director of Dental Services	Majuro, Marshall Is. Trust Territory of the Pacific Islands
Viet Nam	Dr. (Miss) Thi-Thin Vu Chief, Bureau of External Relations Ministry of Health	59 Hong Thap Tu Street, Saigon
	Dr. Trinh-Van Tuat Director of the Dental Section Faculty of Medicine	Faculty of Medicine Saigon
Western Samoa	Dr. John S. Walker Principal Dental Officer Health Department	Health Department Apia

EASTERN MEDITERRANEAN REGION

Pakistan	Dr. Hassan Raza Shah Principal, de'Montmorency College of Dentistry and Superintendent, West Pakistan Dental Hospital, Lahore	West Pakistan Dental Hospital Lahore

SOUTH-EAST ASIA REGION

Ceylon	Dr. W. Balendra Medical Officer-in-charge Dental Institute, Colombo	Dental Institute Colombo
	Dr. S.S.P. de Jong de Silva Principal, School for Dental Nurses and Children's Dental Clinic	16 Tickell Road Colombo
India	Dr. J.C. Manchanda Principal, Government Dental College, Amritsar Punjab State	Government Dental College Amritsar, Punjab State
Indonesia	Dr. R.G. Soeria Soemantri Chief, Dental Health Section Public Health Service	5, Djl. Bungsu Bandung
Thailand	Dr. See Sirisinha Dean, School of Dentistry University of Medical Sciences	University of Medical Sciences Bangkok

OBSERVER

Federation Dentaire Internationale	Professor J.P. Walsh Dean, Faculty of Dentistry University of Otago Dental School	P.O. Box 647 Dunedin, C.1

AUSTRALIAN ORGANIZING COMMITTEE

Dr. K.R. Moore Chairman and Executive Officer	Dentist	67 Unley Road Unley South Australia
Mr. A.W.S. Arnold Member	Senior Administrative Officer Commonwealth Department of Health	CML Building King William Street Adelaide South Australia
Dr. Peter C. Reade Member	Dentist	4 Te Anau Avenue Prospect South Australia

CONSULTANTS

Professor T.D. Campbell	Dean, Faculty of Dentistry University of Adelaide Adelaide, South Australia
Dr. Donald J. Galagan	Assistant Chief Division of Public Health United States Public Health Service Washington, D.C., U.S.A.
Mr. Gilbert S. McDonald Seminar Director	Former Deputy Director of Education Department of Education Adelaide, South Australia
Professor Jens Waerhaug	Professor of Dentistry and Head of the Department of Periodontics and Crown and Bridge Norwegian State Dental School Oslo, Norway
Professor John P. Walsh	Dean of the Faculty of Dentistry University of Otago Dental School Dunedin, New Zealand
Dr. Stephen Falkland	Regional Public Health Administrator World Health Organization Western Pacific Regional Office Manila, Philippines

Dr. J.M. Cruikshank	WHO Area Representative Ocean House 34 Martin Place, Sydney Cable address: UNISANTE SYDNEY Telephone : BW3571
Dr. F. Bruce Rice	Dental Health Officer WHO Headquarters Geneva

ANNEX III

DISCUSSION GROUP MEMBERS

GROUP 1 (Room 125)

1. Dr. Kenneth T. Adamson	Aust.
2. Dr. Laurence R.A. Williams	Aust.
3. Dr. Pu Mao-Yen	China
4. Dr. Teck Eng Tay	Singapore
5. Dr. Hyon Chan Yoon	Korea
6. Dr. Francisco L. Ramirez	Philippines
7. Dr. James N. Harcus	Sarawak
8. Dr. Trinh-Van-Tuat	Viet Nam
9. Dr. Hassan Raza Shah	Pakistan
10. Dr. J. Bruce Bibby	N.Z.
11. Dr. R.G. Soeria Soemantri	Indonesia
12. + One Faculty Member	

Chairmen: Topic I Dr. K.T. Adamson
Topic II Dr. L.R.A. Williams
Topic III Dr. J.N. Harcus
Topic IV Dr. J.B. Bibby

Rapporteurs:
Topic I Dr. L.R.A. Williams
Topic II Dr. K.T. Adamson
Topic III Dr. J.N. Harcus
Topic IV Dr. F.L. Ramirez

GROUP 2 (Room 211)

1. Dr. Robert Harris	Aust.
2. Dr. Alfred J. Hoole	Aust.
3. Dr. Bernard Lilienthal	Aust.
4. Dr. Deryk M. Ellerton	Fiji
5. Dr. Yap Jin-Hwee	Hongkong
6. Dr. Albert Stöpler	N.N.G.
7. Dr. Aaron A. Jaffe	U.S.T.T.P.I.
8. Dr. Cheah Cheng Kooi	Singapore
9. Dr. Geoffrey H. Leslie	N.Z.
10. Dr. J.C. Manchanda	India
11. + One Faculty Member	

Chairmen: Topic I Dr. R. Harris
Topic II Dr. J.C. Manchanda
Topic III Dr. D.M. Ellerton
Topic IV Dr. G.H. Leslie

Rapporteurs:
Topic I Dr. D.M. Ellerton
Topic II Dr. A.J. Hoole
Topic III Dr. A.A. Jaffe
Topic IV Dr. Cheah Cheng Kooi

GROUP 3 (Room 202A)

1. Dr. Norman H. Andrews	Aust.
2. Dr. Noel D. Martin	Aust.
3. Dr. Abdul Karim	Malaya
4. Dr. Walter C. Allwright	Hongkong
5. Dr. Mitsuharu Takeuchi	Japan
6. Dr. Delfin Almanzor	Philippines
7. Dr. Thi-Thin-Vu	Viet Nam
8. Dr. John S. Walker	W. Samoa
9. Dr. W. Balendra	Ceylon
10. Dr. See Sirisinha	Thailand
11. Dr. Mook Qui Wong	Singapore
12. + One Faculty Member	

Chairmen: Topic I Dr. W.C. Allwright
Topic II Dr. N.H. Andrews
Topic III Dr. W. Balendra
Topic IV Dr. N.D. Martin

Rapporteurs:
Topic I Dr. Mook Qui Wong
Topic II Dr. W.C. Allwright
Topic III Dr. J.S. Walker
Topic IV Dr. See Sirisinha

Group 4 (Room 204)

1. Dr. Neil E. Goldsworthy	Aust.
2. Dr. Bernard A. Collins	Aust.
3. Dr. Wong Jee-Lum	China
4. Dr. Chellie J. Sundram	Malaya
5. Dr, Ratu I.L. Vosailagi	Fiji
6. Dr. Seiichi Ochiai	Japan
7. Dr. Tae Suk Shim	Korea
8. Dr. Cayetano R. Eustaquio	Philippines
9. Dr. David E. Barmes	Papua
10. Dr. S.S.P. de Jong de Silva	Ceylon
11. Prof. K.J.G. Sutherland	Aust.
12. Dr. Keijiro Takagi	Japan
13. + One Faculty Member	

Chairmen: Topic I Dr. D.E. Barmes
Topic II Prof. K.J.G. Sutherlan
Topic III Dr. D.E. Barmes
Topic IV Dr. D.E. Barmes

Rapporteurs:
Topic I Prof. K.J.G. Sutherlan
Topic II Dr. B.A. Collins
Topic III Dr. N.E. Goldsworthy
Topic IV Dr. S.S.P. de Jong de Silva

ANNEX IV

REFERENCE MATERIAL AVAILABLE TO PARTICIPANTS

1. Some suggestions on preparing a State Dental Programme Plan. (Department of Health Service, Washington 25, D.C., May, 1958)

2. Indexes and measurements in Dental Public Health Practice.

3. Auxiliary Dental Personnel and the Evolution of Dental Practice by Mario M. Chaves. (WHO/DH/22, 12th May, 1958).

4. Report of the Expert Committee on Water Fluoridation (WHO/DH/16, 4th September, 1957). (WHO Techn. Rep. Ser. 146, 1958).

5. Appendices to Summary of Accomplishments in Dental Health in the Western Pacific and South-East Asian area during the last five years. (WPR/DH/10).

India	Add. 2	16 January 1959
Pakistan	Add. 3	11 February 1959
Ceylon	Add. 4	12 February 1959

6. Report of the Expert Committee on Auxiliary Dental Personnel. (WHO/DH/30, 15th July, 1958) (WHO Techn. Rep. Ser. 163, 1959)

7. Replies to Questionnaire on Auxiliary Dental Personnel. (WHO/DH/28, 13th June 1958).

SUMMARIES OF WORKING PAPERS*

1.	The Role of the Profession in a Dental Health Service by Professor J.P. Walsh	WPR/DH/1
2.	Methods for the Prevention and Control of Dental Diseases particularly Periodontal Diseases, which can be Applied by a Dental Health Service by Professor Jens Waerhaug	WPR/DH/2
3.	The Role of the Auxiliary Personnel in a Dental Health Service by Hassan Abdel Latif, B.CH.D., F.D.S., Eng.	WPR/DH/3
4.	Evaluating a Dental Health Service by G.H. Leslie, D.D.S. (D.H.)	WPR/DH/4
5.	Health Education of the Public for Dental Health by Dr. Chellie J. Sundram	WPR/DH/5
6.	Methods for Making a Dental Health Survey and Reporting the Results by Dr. Keijiro Takagi	WPR/DH/6
7.	Present Status of Reporting Dental Diseases and Recommendations on Procedures by D.J. Galagan, D.D.S., M.P.H.	WPR/DH/7
8.	Guiding Principles in the Organization and Administration of a Dental Health Service by D.J. Galagan, D.D.S., M.P.H.	WPR/DH/8
9.	Food and Dental Health (A study of some basic factors as seen in the Australian Aboriginal) by Professor T.D. Campbell	WPR/DH/9

*A limited number of complete working papers can be obtained from the Western Pacific Regional Office of WHO, Manila.

THE ROLE OF THE PROFESSION IN DENTAL HEALTH SERVICES

by

Professor J.P. Walsh

Standards of training of the dental profession differ greatly. The length of the course of study for dental degrees or diplomas may vary from three to six years. The contents of the curricula are so varied that it is difficult to make any generalizations.

The ratio of dentists to population varies enormously. The qualitative and quantitative relationships of the dental profession to the medical profession give an indication of the standing and importance of dentistry in a particular area. (See table below).

AREA	POPULATION PER PHYSICIAN	POPULATION PER DENTIST	RATIO OF DENTISTS TO PHYSICIANS
Africa	9,055	70,070	1 : 8
North and Central America	902	2,536	1 : 3
South America	2,507	4,370	1 : 2
Asia	6,410	36,160	1 : 6
Europe	931	2,630	1 : 3
Oceania	1,145	3,170	1 : 3

It is therefore necessary to point out that the establishment of a dental health service in any country must depend on the number and the status of the dental profession. A dental health service cannot be directed by non-dental personnel, nor performed solely by auxiliaries. In fact, unless there are adequately trained, qualified dentists in an area, there can be substitutes for dentists, but no dental auxiliaries in the accepted sense of this term. Therefore, even in the most underdeveloped country, the development of the dental profession is a primary consideration in the setting up of a dental health service.

Although dental health services are primarily for the benefit of the individual, they may be organized by and for the community. Fluoridation of water supplies can only be applied on a community or group basis. Clinics for school children are an example of a service to a particular group. The private practice of dentistry is a dental health service to the patients of the individual dentist. In short, virtually all aspects of dentistry are dental health services.

The problems of dental disease at the present time are so great that the task of bringing any community to a state of dental health is beyond the capacity of the unaided profession. We need a great variety of assistance from medical personnel, educators, scientists, health administrators, as well as from specially trained auxiliary workers.

In the development of a service, the profession should first ascertain the incidence and prevalence of dental diseases and the dental manpower position and the present dental services in relation to these needs.

The profession should stimulate public awareness of the dental problems of the country and so create a demand for an adequate dental health programme from the people, the allied health professions and the government. In co-operation with interested health organizations, both national and international, the dental profession should plan the development of dental health services for the community.

Such plans should include provision for continuing research, dental health education for all, and preventive and curative dental care for all eventually, but with the establishment of treatment for priority groups. The prevention and control of dental disease in children and pregnant women and the elimination of pain and sepsis in the adult population are well-recognized early priorities.

The plans should include as a top priority the establishment of government-supported educational and training schemes for personnel. Professional advice and aid should be given in the creation of community or public dental health organizations, including a dental division of the Department of Health at the national level.

In addition to the above, the dental profession will be required to participate actively in the implementation of the programme as administrators, teachers, supervisors and practitioners.

Voluntary and compulsory insurance schemes, social security benefits paid on a fee-for-services basis to practitioners, and full or part-time salaried public service schemes are among the methods used for financing the services.

The initial level of professional education required for registration or to legally practise dentistry should be related to the realities of the overall socio-economic and educational level of the particular country. Then it should advance as the country as a whole advances. As the general levels of education, health and living conditions gradually improve, the standards of dental education should be increased.

Dental health services cannot be limited to the fortunate few who can afford highly qualified private practitioners. The profession must

be prepared to work in hospitals and children's clinics, to treat priority groups, to train and work with auxiliaries and to foster preventive measures such as fluoridation and health education. Above all, while rightly insisting on the maintenance of professional standards, the profession must place the welfare of the people above all considerations of personal gain.

-oOo-

Summary
WPR/DH/2

METHODS FOR THE PREVENTION AND CONTROL OF DENTAL DISEASE, PARTICULARLY PERIODONTAL DISEASE, WHICH CAN BE APPLIED BY A DENTAL HEALTH SERVICE

by

Professor Jens Waerhaug, L.D.S., Ph.D.

For the prevention and control of periodontal disease, it is essential to know its cause. Mainly, three etiologic factors are considered:

Systemic disturbances

Among the classic examples can be mentioned the severe development of periodontitis in malnutrition, C-avitaminosis, pellagra, diabetes, pregnancy and blood dyscrasias. However, these and similar disturbances do not always lead to periodontitis. Most people with periodontitis are clinically healthy. Therefore, attempts to control this disease by systemic treatment have proved to be of little value except for singular cases. Traumatic articulation has been attributed much importance by many clinicians, but systematic investigations do not seem to substantiate such a standpoint. Occlusal trauma may lead to transitory disturbances in the intra-alveolar part of the periodontal membrane, but only in exceptional cases will pocket-deepening ensue. Stress may aggravate an existing periodontitis in cases where loss of teeth and supporting tissue, caused by other factors, have mutilated the dentition, but stress alone will hardly cause periodontitis in a full dentition.

Local irritation

It is pointed out that normal conditions exist when the epithelial cuff encloses the tooth to the gingival margin without any inter-jacent calculus or bacterial plaque. There are probably no micro-organisms in healthy gingival crevices; foreign bodies and bacteria are quickly ejected when forcibly inserted.

The anatomy of the periodontium predisposes for disease as the teeth allow bacterial plaque to be retained. The plaque, consisting mainly of living micro-organisms, will grow along the tooth surface and finally it will come into contact with the gingivae. Due to the constant contact with the plaque, the gingivae will become inflamed. Under favourable conditions, the plaque may not grow below the gingival margin, but in most cases it does. The contact area with the gingivae will increase and the inflammation will penetrate deeper into the periodontal tissue.

Sooner or later, the periodontal fibres below the epithelial cuff will be destroyed and a pocket deepening takes place. Thus, the speed

of the apical growth of plaque will decide the speed of the periodontal destruction.

Mechanical irritation may play a role in singular cases, but the irritation from calculus and faulty restorations is mostly caused by a thin layer of plaque.

Chemical irritation from restorations is hardly a mentionable factor in comparison with toxic irritation from bacterial plaque which is almost invariably retained on them.

On the foregoing premise, it should be obvious that the main efforts in the prevention of periodontal disease should be directed against the bacterial deposits. Plaque is first formed always above the gingival margin and later it becomes subgingival. Thus, a thorough removal of supragingival plaque twice a day will prevent formation of subgingival plaque and calculus.

When instructing in oral hygiene, it is essential to tell the patient that his pyorrhea is caused by living bacteria lodged on the teeth, and that it is just as important to remove plaque on the lingual and interproximal surfaces as on the visible labial surfaces. Tooth-picks and special brushing techniques are necessary to attain a 100% cleaning of teeth.

Subgingival deposits must be removed by means of adequate instruments. If the removal has been complete, healing will ensue and normal crevices with healthy epithelial cells adhering closely to the teeth right up to the gingival margin will be the result.

With successful co-operation between patient and dentist, it is possible by means of hygienic measures to prevent most periodontal disease.

Improvement of nutrition is imperative in countries with pandemic malnutrition.

Routine equilibrium of articulation in young individuals with a full dentition is not warranted in a dental health service.

An important step in the control of periodontal disease is the introduction of periodontics as a separate subject into the curriculum of dental schools. The dental profession must be trained in treatment and prevention of periodontal disease, and every dentist must be made aware of his responsibility to treat this disease as well as caries.

-oOo-

Summary
WPR/DH/3

THE ROLE OF THE AUXILIARY PERSONNEL IN A DENTAL HEALTH SERVICE (APPLIED TO THE CONDITIONS IN SUDAN)

by

Dr. Hassan Abdel Latif

The development of a dental health service depends largely on the economic and educational development of the people, and in under-developed countries, it would be absurd to copy the examples of advanced ones. The problems facing such countries are many: the population may be largely illiterate, conditions of life primitive, the number of available dentists small, the incidence of dental disease high, and financial resources meagre.

The needs of this type of population are restricted to relief of pain and infection. This primary stage should in time be followed by the education of the public in the importance of oral health, and the provision of dental personnel to give such treatment as an enlightened and educated public demands.

It is practically impossible to render this emergency treatment through qualified dentists and therefore some other means should be considered.

An auxiliary has been defined as a partly trained or partly qualified person who performs tasks which are generally entrusted to a fully qualified dentist, e.g., dental hygienists (U.S.A.) and dental nurses (N.Z.).

A special class of auxiliaries should therefore be created for the under-developed countries which would not be acceptable in highly developed countries, i.e., the assistant dental practitioner who is properly trained to perform extractions under local anaesthesia and drain abscesses.

If a country has previous experience of such auxiliary staff in other branches of the health service, e.g., assistant medical practitioners, theatre attendants, laboratory assistants and radiographers, then it becomes essential to recruit the dental assistants from the same educational level.

Establishment of the school dental nurse system seems the obvious solution of children's dentistry, but in many Eastern countries education of girls is usually far behind that of boys so that suitable recruits are not easily available.

Sudan is a vast country of one million square miles in area, sparsely inhabited by 10,262,536 people who are of diverse racial origins, habits and beliefs. Conditions of life are very primitive in most parts and means of communication are inadequate; many districts are isolated for months in the rainy season. Until ten years ago, no provision for dental health was made and extraction of teeth was carried out by hospital and dispensary staff who had had no dental training.

The immediate problem is to make available for both rural and urban population the treatment most urgently required, that is, relief of pain and infection. This cannot possibly be given through qualified dental surgeons, the number being at present 28. The only solution seems to be the recruitment and training of auxiliary dental personnel.

A similar system in the medical field has been followed in the Sudan for the last forty years, whereby male "nurses", trained in medical subjects for two years, are placed in charge of dispensaries to treat minor ailments and dress wounds; they have been rendering a valuable service.

However, no proper dental service can be built on extractions and relief of pain, and the next step is to educate the public in the importance of dental health. It is proposed to launch separate campaigns for adults and children. The idea is to start a school dental service on the New Zealand model with appropriate modifications to suit the local conditions. In addition to regular examinations, the dental nurses, under the supervision of the school dental officer, will do fillings, extractions of primary teeth and scaling. They will give lessons on oral hygiene and talks to women in welfare and maternity centres and women's clubs.

It would be absurd to educate the public in dental health without the provision of qualified dentists to render the type of treatment required by enlightened patients, and plans must be prepared to have such dentists well in advance; moreover, they will be badly needed to supervise the work of the auxiliaries referred to.

-oOo-

Summary
WPR/DH/4

EVALUATING A DENTAL HEALTH SERVICE

by

G. H. Leslie, D.D.S. (N.Z.)

In order to determine the value of anything, it is first necessary to have some criterion upon which to base the valuation. In other words, since it is purely relative, a value can be established only by reference to an appropriate standard.

In the case of a dental health service, unless the standard selected for the purpose of comparison is a realistic one, that is, one which could be attained under the conditions in which the service is operating, then the evaluation itself is of little value. Stated in another way, although the ultimate objective of any dental health service should be to provide a complete service, the progress towards this objective must necessarily be gradual, which means that the stage of development of the country in which that particular service is functioning should be taken into account and the effectiveness of the service in providing for the needs of the community of that country evaluated accordingly.

This method of approach to the evaluation of a dental health service may invite the criticism that if criteria which do not represent an international standard of comparison are used to evaluate the effectiveness of a service, the findings will have no general significance. This is true enough. However, for those actively concerned with developing a service, particularly in a less advanced country, the method suggested provides the most useful type of information with which to assess progress and to plan ahead, and as these are the main purposes of evaluating a dental health service it seems the most logical method to adopt.

On the assumption that a relative, rather than an absolute evaluation of a dental health service is acceptable, the first requirement is to have an accurate record of conditions as they existed prior to the introduction of the service or, if the evaluation is being made of a service in operation, as they were at some earlier stage in its development.

This calls for information on the following subjects:

(1) Population statistics and geographical distribution.

(2) Condition of the public dental health.

(3) Scope of the public dental health service.

(4) Political, social, economic and cultural conditions.

(5) Availability of dental manpower.

(6) Facilities for dental education.

Other subjects still may warrant attention but it is on the basis of information of this nature that a dental health service of any particular country should be evaluated.

Obviously, no two services will be required to operate under the same local conditions nor will they have the same objectives, therefore, they cannot logically be evaluated on the same basis. A relative result is the most that should be expected.

On first thought, an evaluation of a dental health service does not appear difficult. All that seems necessary is to create an ideal service in the imagination or be familiar with one that is considered ideal, and then with this sort of service in mind to take a look at the one to be evaluated and see how it compares.

It is suggested, however, that there are limitations to this method of approach, because it makes no allowance for individual circumstances. Admittedly, a dental health service should be judged on results, but it is contended that if an evaluation is to have any practical significance, these results must be examined in the light of the conditions under which the service is obliged to function.

Reduced to the form of a brief concluding statement, it might be said that an evaluation of a dental health service should be concerned with this critical question - "Are the aims and objectives of the service appropriate to the extent and urgency of the dental needs of the community and commensurate with the material and financial resources of the country?".

-oOo-

Summary
WPR/DH/5

HEALTH EDUCATION OF THE PUBLIC FOR DENTAL HEALTH

by

Dr. Chellie J. Sundram

The "indoctrination" of dental health principles is gradually and by degrees replaced, as the country advances, by the "leading" stimulation of logical thinking.

In a lesser developed country a campaign directed towards educating the public has as a goal:

(1) Arousing a community or nation into becoming aware of its dental needs and thereby creating a just demand for the provision of adequate dental services.

(2) Informing a community of scientific facts concerning the dangers of dental disease and methods for preventing dental ills and anomalies.

(3) Removing fears and prejudices concerning dental treatment, thus paving the way for the prevention and control of dental disease.

(4) Expanding the dental services in terms of increased "manpower" and equipment.

This broader concept of the scope of dental health education is to be distinguished from the circumscribed concept of instructing the public only in matters concerning the prevention of dental diseases. Obviously, providing increased facilities alone for dental care will not adequately solve the problem unless a demand is created in the minds of the public. It is only when the public is forcibly awakened to recognize its needs that the improvement of dental services will be allotted its just due in the general scheme for development in the country.

In organizing a campaign to educate the populace of a nation in matters concerning dental health, adequate attention must necessarily be given to the degree of development of that nation in regard to the extent of literacy, the socio-economic position of the country, the existence of dental services in terms of population per dentist ratios, and the prevalence and incidence of dental diseases and anomalies.

Simultaneous with the creation of dental administration units within the framework of the government service, an analysis of the prevalence of dental disease should be instituted. Then commences the process of arousing the government and the populace.

Health educators are frequently reminded that knowledge seldom moves people to action. In this respect, arresting but simple posters containing an admonition such as "Be proud of your teeth" make the appeal more a request than a command. Repetition imprints it on the mind. It is imperative to have posters that "talk" rather than words.

Criticism has been levelled at health education because many of its procedures are based on threats. However, in countries in the first grade of development, fear may be the main method of making the population aware of the implications of a dental disease.

The institution of fluoridation of the water supply in countries in the second and third grades of development presents no problems from the standpoint of public acceptance, whereas in countries in the fourth grade of development a deluge of protests is hurled at the administrators.

It is essential TO STUDY THE MEANS OF COMMUNICATION best suited for the propagation of dental health education in the country. This requires a thorough knowledge of the community and its racial composition. The food habits of the different racial groups need to be understood.

The most effective channels for educating the public are:

(1) In the dental clinics through the dentists, dental auxiliaries such as chairside assistants, school dental nurses and dental hygienists, where direct contact with the public gives ample opportunities for dental health education.

(2) Contacts with clubs and associations, schools, mother and child centres.

(3) Organized dental health exhibitions - dental stalls in agricultural and trade fairs, sections devoted to dental health in a health convention or health exhibition.

(4) General propaganda by means of audio and visual methods, dental exhibits, printed matter, posters, etc.

One reason for adults dreading the dental appointment IS THE ANTICIPATION OF PAIN. The intense fear and dislike in the patient can frequently be traced to an unfortunate childhood experience at the dentist's. The answer, then, in its simplest form, is a drastic change in approach to the child patient and a recognition of the child's need for basic psychological satisfaction.

Apart from the psychological approach, it is thought that dental clinics designed for children should undergo a drastic change of interior decoration. The "dentist's chambers" idea or the operating theatre idea should be abandoned and replaced by less fearsome and more basic equipment.

IN FACT THE CONSERVATION AND WAITING ROOMS SHOULD RECEIVE THE "CIRCUS TREATMENT". (This expression is coined by the writer to describe the circus-like appearance (bird, fish and animal decorations) that he advocates in children's dental clinics).

Prejudices can be removed if the children's clinic is open to parents and interested onlookers. In countries particularly in the first and second grades of development, there exists a real need to have dentistry "sold" to the public in a manner which die-hard dentists will find difficult to condone.

To assess the effectiveness of dental health education requires a detailed evaluation survey which in its entirety is possible only in countries in the fourth grade of development. The difficulties of programme evaluation should not deter workers in lesser developed countries from observing the philosophy of evaluation. The appraisal of the accomplishments of dental health education programmes, however, is primarily concerned with a quantitative measurement in terms of prevention of dental disease or the reduction of its consequences.

-oOo-

Summary
WPR/DH/6

METHODS FOR MAKING A DENTAL HEALTH SURVEY AND REPORTING THE RESULTS

by

Dr. Keijiro Takagi

The purpose of a dental health survey is to obtain information on the prevalence of dental diseases in the nation or in a specific group, the method and extent of treatment given, oral hygiene habits and the nature of preventive measures. These data are indispensable for promoting the dental hygiene and the health of the nation or of the specific group.

The coverage of the survey can range from complete enumeration to a few case-studies, i.e., the whole population may be included by random sampling or only arbitrarily selected groups.

All dental and oral diseases should be surveyed, but the main items will be dental caries, periodontal disease, malocclusion, stomatitis, gingivitis and mottled teeth. In addition, the dental treatment already given should be recorded.

Items to be surveyed may be divided into (1) general and (2) dental.

(1) General items are: area, name, sex, age, category of household, coverage of medical insurance, tooth brushing habit, frequency of baby delivery and fluoridation of water.

(2) Dental items are:

(a) Dental caries: (i) untreated teeth (showing the degree of caries), (ii) treated (or restored) teeth (showing the type of treatment, e.g., amalgam and cement fillings, inlays, crowns, pivots, etc.)

(b) Periodontal disease: affected area and type and degree of the condition.

(c) Malocclusion: type and extent of malocclusion.

(d) Stomatitis and gingivitis: type and extent of affected area.

(e) Mottled teeth: affected area and extent of mottled teeth.

(f) Whole tooth replacements (bridges, dentures).

Primarily, common standards must be established as regards diagnosis and classification of dental diseases and also as regards the extent or degree of the conditions. The problems are summarized as follows:

(1) Dental caries: The diagnosis should be made either macroscopically or with explorers and, if necessary, x-ray examinations may be added. There are many methods of classifying the degree of dental caries. However, the five-degree classification was adopted by the Ministry of Health and Welfare, Japanese Government, in 1957. They are D_0, D_1, D_2, D_3 and D_4.

(2) Periodontal disease: At present we have no uniform standard of diagnosing periodontal disease and its degree. This is now under study by the Research Group for Periodontal Diseases sponsored by the Research Fund of the Ministry of Education.

(3) Malocclusion: On the diagnosis of malocclusion, we have felt the necessity of establishing better classification standards and a more simple and adaptable classification method.

(4) Stomatitis and gingivitis

(5) Mottled teeth: (Definition -- Mottled teeth are teeth showing white opacity on the surface of the crown). These are rather widely prevalent throughout the world, but the conception of the condition is still indistinct and there are many methods of classification. We have the following classification:

M_1 - spotted in white (partially mottled)

M_2 - diffused white opacity on the whole surface

M_3 - in addition to the conditions M_1 and/or M_2, having other defects of tooth structure

B - in case of discoloration on the surface of the teeth, a "B" mark should be attached to M_1, M_2 and M_3, respectively.

(6) Restored teeth: These are classified as teeth with fillings, crowns, pivots, etc., but excluding those with recurrent dental caries.

(7) Whole tooth replacements: The presence and extent of bridges and dentures should be recorded. However, a further study on the method of classification is still required.

It is desirable that the survey should be carried out by utilizing standardized forms. Dentists should be specially trained in order to promote accuracy, uniformity and speed. All entries must be made by the dentist himself or by a well-trained assistant. It is desirable that the State or the head of a community should be responsible for the survey. The items entered in the survey forms should be tabulated by each item. In most cases, mechanical tabulation would be the most economical method.

-oOo-

PRESENT STATUS OF REPORTING DENTAL DISEASES AND RECOMMENDATIONS ON PROCEDURES FOR THEIR STANDARDIZATION

by

Donald J. Galagan, D.D.S., M.P.H.

Indices of dental disease are used to assess the oral health status of a population at any given time, or to compare oral conditions at time intervals or between geographic areas. The specificity of the data needed, however, may differ with each situation. Therefore, it is apparent that a single, rigidly standardized index cannot be recommended for measuring, under every circumstance, a particular dental disease or condition. The index should be selected, and often adapted, to meet the objectives and the conditions of the specific survey or study.

The measurement of some infrequently occurring oral conditions may be made by enumeration or count of the persons affected. However, the major dental ailments (caries, periodontal disease, malocclusion) are so widely prevalent and chronic in character that the number of people with the condition approaches the number in the total population. A statement of the prevalence of these conditions usually has little practical application. Therefore, it has been necessary to devise more sensitive measurements of the severity, or stage of development, of these three conditions.

Requirements for dental indices: In order for an index to be appropriate for public health and epidemiological uses, it must have certain fundamental characteristics: 1) simple 2) reproducible 3) quantitative and 4) it must yield analyzable data which have 5) meaning or pertinence as an expression of the disease.

The DMF index[1] as proposed by Klein, Palmer and Knutson, and its subsequently developed variations, is by far the most practical measurement for assessing dental caries in public health and epidemiological studies.

The DMF-def indices[1] can be used in simple and rapid surveys in which "working estimates" of caries experience are derived from information quickly and readily obtained. They also can be used in a detailed manner (including x-ray findings) to study the distribution of caries by specific tooth and tooth surface.

A "working estimate" of DMF teeth and surfaces may provide the public health worker in under-developed countries with the most

---

[1] For further details see page 28.

effective device for measuring dental caries in the permanent teeth of a child population. Working estimates of dental caries prevalence are based on the known and remarkably constant relationship between the percentage of six to fifteen year old individuals attacked by caries, the average number of DMF permanent teeth per person and the average number of DMF tooth surfaces per DMF tooth. All public-health dentists should be familiar with the use of the working estimate.

At the present time the Russell Index[1] seems to be the most practical, simple and effective for the assessment of chronic destructive periodontal disease.

Russell's system is designed to place the greatest emphasis on advanced disease, and to minimize examiner error. Therefore, it will yield some under-estimation of the true level of periodontal disease in a population.

Indices of malocclusion: Because of the lack of progress in developing a practical method for measuring the severity of malocclusion, suggestions for the use of a single index would not be appropriate.

The fluorosis index[2] developed by Dean and his co-workers provides for a numerical scoring of mottled enamel in the individual, based on the most severe clinical manifestation of the phenomenon noted in two or more teeth.

Standardization of Procedures

It is suggested that international standardization in the reporting of dental diseases might be furthered by reaching decisions regarding the following areas:

Survey planning: The first and perhaps the most important step in development of an international standard procedure for public health and epidemiological surveys is the use of a written plan which will describe the basic elements of the proposed project.

Calibration of examiners: No single factor in the conduct of a survey is more important than the examiner himself. He must be trained to use the index and be calibrated with his fellow examiners.

Terminology: Clearer definitions of terminology will do much to further international exchange of epidemiological information.

Equipment: It is recognized that a standard set of equipment may not be practical in every country. However, the physical equipment has such an important bearing on the survey findings that every effort should be made to develop and use some basic standard.

---

[1] For further details see page 29.

[2] For further details see page 30.

Record forms: A standard method of recording data would do much to facilitate general, world-wide distribution of knowledge about dental disease.

Reporting: The purpose of the project should be stated in every published report, the materials and methods should be described and the procedure for sampling and analysis should be explained. Vague and ambiguous terms should be avoided. Special emphasis must be given to reporting findings by specific ages or age groupings. The basic data collected in the survey should be included in the report in summary tabular form.

-oOo-

Summary
WPR/DH/8

GUIDING PRINCIPLES IN THE ORGANIZATION AND ADMINISTRATION OF A DENTAL HEALTH SERVICE

by

Donald J. Galagan, D.D.S., M.P.H.

It is generally accepted that a comprehensive national dental health programme should contain five basic components: 1) a programme of public health education and information, 2) the application of preventive procedures, 3) provision of direct care of a remedial or corrective nature, 4) leadership in professional development, and 5) research activities. Not every country will be able to develop a dental programme encompassing all five of these areas, and no two countries will engage in any particular activity to the same degree or in exactly the same way. The dental programme must be related very closely to the current level of social, economic and professional development within the particular country. However, the fact that there is a strong interdependence between each of them also produces a combined effect which might be termed the dental-social climate of the country.

A system of programme priorities must be established. There are certain specific criteria which will assist the programme director in selecting programme priorities. These criteria may be identified as: 1) the size and seriousness of the problem, 2) the feasibility of the proposed programme, 3) its scope - that is, the number of people who will benefit, 4) its potential for expansion and development, 5) its public relations or political values and 6) the expressed needs of the population. The dental administrator will establish priorities for programme emphasis on the basis of these direct assessments of the dimensions of the problem and the impact of the proposed action on the problem.

Once programme priorities have been determined, objectives must be established as goals toward which to work: 1) Ultimate or long-range objectives, 2) the immediate or short-range goal, designed to bring the programme to the long-term objective by a series of planned, incremental steps and 3) evaluation of the programme at periodic intervals. In the case of dental programmes it would mean a determination of the extent to which the administrator has accomplished what he set out to do. Evaluation procedures should be provided for from the very beginning. This would seem to be especially important in under-developed countries, where programme administrators must be keenly sensitive to change.

The programme director should strive for a proper balance between the various categories of work. Admittedly, not every country will be able to establish comparable programme in prevention, education, research

and professional development. If there is a lack of balance, the programme director may wish to try for some beginning activity, however small, in each of the programme areas in order to provide for a better balanced operation in the future.

The programme must have an adequate, continuing and expanding financial base with the funds controlled by the programme director. Achievement of this task is the first, most difficult and probably the most important job the programme director faces. A convincing justification of the need for the funds and the worth of the proposed activities must support the request for money. In addition, the programme director must keep appropriating bodies acquainted continually with the programme goals, activities, problems and accomplishments. He must engender the continuing support of the appropriating body, and in the final analysis, of the public.

There should be clearly defined standards for employment and performance of programme personnel and for materials used in the operation of the programme. The programme director should meet extremely high standards of education and experiences in dentistry and public health. Staff personnel, below the level of the administrator, should meet specifications consistent with the general level of the dentists and related groups employed or practising in the country.

Standards of performance, especially for clinic procedures, should be established to provide measurements of competence for operating personnel and to ensure that there is a worthwhile expenditure of time.

The use of a standardized method of recording and reporting dental diseases, dental operations and the other activities of the programme also will facilitate evaluation. Standardized records will enable the programme administrator to compare regions, groups of persons and points in time.

The national dental service should provide leadership to the profession, and to the citizenry, in matters relating to dental health practices. One of the main tasks in providing responsible leadership in health matters is to determine how far ahead of existing concepts it is possible to go and still find effective acceptance of ideas.

Public attitudes and understanding of dental health service practices are undergoing constant change. When an attempt is made to bypass these natural evolutionary changes in a country, the unconventional, unorthodox proposal is apt to be viewed with scepticism. As a result the proposal is ineffective in improving the dental health of the nation. The intelligent hastening of the process, however, is a proper responsibility of the national health administration, and the ability to provide leadership in social and professional development is the real mark of competence in the public health worker.

-oOo-

Summary
WPR/DH/9

DIET IN RELATION TO DENTAL HEALTH

by

Professor T. D. Campbell

This paper deals with some basic factors in the relationship between diet and dental health, viewed from a study of an aboriginal group.

The Australian aboriginal is probably one of the most homogeneous groups of man living in modern times. Under his natural conditions, his teeth and jaws are so sound and effective, that he provides valuable material on which to base studies of fundamental principles which underline dental problems.

This excellent dentition of the Australid is a typical feature of those living in their own natural environment; there is complete absence of caries and other dental troubles among the children, adolescents and young adults. Break-down of the dentition generally occurs only in the more advanced years of life. The majority of individuals possess all or a sufficient number of their teeth in a healthy and effectively functioning state for most of their lifetime. Food and food habits appear to be the major factor in maintaining the sound healthy dentition which is characteristic of the Australid.

Research on aborigines in Central Australia, carried out over many years from the University of Adelaide, has enabled continued studies to be made on their dental condition and oral health over a wide scope of environmental conditions. These have ranged from those living entirely their own natural way of life to those who have been affected by varying stages of detribalisation, and those who have lived all their life under more or less civilized conditions and food habits. Under an intensely nomadic type of existence, the aboriginal's food habits appear to be a highly significant factor in maintaining dental health. He eats an extremely wide range of food items. Many of these, especially vegetable and fruit, are consumed in their raw state. Any preparation of food materials is carried out by simple, crude methods. His mode of cooking food is by very simple means of heat treatment; by covering or burying in hot sand or ashes. His means of preparation and cooking are such that it is unlikely the nutritive properties are destroyed to any significant degree. The detergent effect of his food and method of consuming them is obvious.

A most important feature is that whatever be the manner of his food treatment, its physical texture demands vigorous mastication. He uses nothing else but his teeth and hands in getting his food into his mouth. That vigorous chewing takes place is amply evidenced by marked occlusal and interproximal attrition. This occurrence of tooth wear

during the consumption of food must be viewed as a physiological factor in the dynamics of mastication. Anyone who has had the opportunity of observing the Australid in his own way of life never fails to be impressed by the vigorous use of teeth and jaws. The result of this effective use of teeth and jaws is seen in the maintenance of his extraordinarily fine dentition and dental health.

Ample evidence has been collected to show that the assimilation of civilized food habits ultimately brings about a break-down in his dental health. The possession of a strong natural denture, through heredity and developmental factors, is no guarantee that it will remain intact, With those aborigines who have, over several generations, adopted the food habits of white man, the dental picture is one which approximates that customarily seen in white communities. But with those who have adopted such habits, it has been observed that where the old time customs persist of preparing even civilized food materials with a measure of crudity - which still demands vigorous mastication - then the process of dental destruction appears to be slowed down to a significant degree. Observations have also shown that development of unhealthy periodontal conditions in young aborigines becomes a more significant and serious matter than the incidence of dental caries. There are obvious lessons to be derived from such a study. Modern man cannot possibly revert to the living habits of the Australid. It seems certain that unless civilized communities can be educated and motivated to see the need for some sort of reform in their food habits, then the present deplorable progress of dental deterioration must continue.

The problem is to find ways and means of educating people and their governments to the need for more and better foods where they are not available and, where good foods are in plenty, to make better use of them.

This study of an aboriginal people and their dental health emphasizes two major factors: variety of food items in their natural state and physiological use of teeth.

-oOo-

EVALUATION*

An Interim Evaluation

An interim evaluation of the Seminar was carried out at the end of the first week in order to ascertain the reaction of the participants to its conduct and content. On the basis of the results of this evaluation certain modifications were made in the conduct of the Seminar. For this purpose, two questionnaires were used (WPRO 63/EVAL/1 and WPRO 63/EVAL/2). The number of answers received is reflected on both forms. It should be noted that 68.4% of the replies indicated that the proceedings of the Seminar were very effective, 24.7% fairly effective and 6.9% not effective. Certain comments made by participants might be of interest and are quoted hereunder:

- Participants should have been selected on their professional merit and standing and not because of their possible connections with the governments.

- Some of the participants did not possess a sufficient command of English and this tended to slow down discussions.

- Grouping of topics at the Seminar and their titles should have been given well in advance of the Seminar.

- There should have been more opportunity for informal discussions with faculty members.

In connection with the interim evaluation questionnaire (administrative), 73.2% of the replies considered the Seminar arrangements efficient, 22% satisfactory and 4.8% unsatisfactory. Typical comments of interest were as follows:

- An excellent organization, but activities too tight leaving no time for personal matters or for preparation between topics.

- Accommodation provided has not been quite satisfactory.

- Per diem allowances were not sufficient to cover the expenses.

End of the Seminar Evaluation

This evaluation was carried out with the help of two questionnaires WPRO 63/EVAL/3 (administrative) and WPRO 63/EVAL/4 (achievements of the meeting).

---

*The evaluation forms as used during the Seminar are enclosed, indicating the number of answers received. The interim evaluation was completed by forty-two participants and the end of the Seminar evaluation by forty-four participants.

Administrative Evaluation

In response to the administrative evaluation questionnaire, 68.1% of the replies indicated that the Seminar arrangements were excellent, 22.2% good and 9.7% poor. It is not possible to quote all comments made by participants, but the following reflect the characteristic trends of thought:

What improvements would you suggest for future seminars?

Language:

- Participants should have a better understanding or at least a better standard of spoken English. Their contribution to the discussions would then have been of more value.

- The government, when selecting participants, should pay a great deal of attention to the command of language in which the Seminar is to be held.

Selection of participants

- Better selection by the governments of participants who are directly concerned with the subject of the Seminar and who are thoroughly familiar with the conditions in their respective countries.

Location and timing of the Seminar

- There is something to be said for locating the next seminar in one of the countries which has urgent dental problems. A seminar should be held every three years. The best place for the next seminar would be India.

General organization of the Seminar

- The main title of the topics and their guidelines should be forwarded to each participant well in advance. This would give him time to prepare the subject better and bring to the Seminar relative materials, such as statistical data.

- While it is recognized that working papers are the basis of seminar presentation, it is considered that in group discussions where so many of the participants are shy, the principles expressed are too readily accepted. This occurs to a great extent when the working papers are of a high standard as on this occasion. Perhaps the solution could have been that the consultant would work on outlines of thought and have them distributed to participants two months prior to the Seminar. The participants would then have to do more work and this would help establish a more positive line of thought.

- The timetable should be modified to allow more free time for rest and personal matters.

- Better opportunity should have been given to participants to meet the consultants, staff and other experts.

- The first topic in the plenary discussion should perhaps be a subject on which it would be easy for participants to speak. For example, perhaps participants could give a short summary of accomplishments. This would "break the ice" and encourage participation of shy members.

Accommodation

- Accommodation and service should be better in order to satisfy overseas delegates.

- It would be advisable to accommodate faculty members and participants under the same roof.

General comments

- The Seminar was planned, organized and conducted on an excellent level.

- With regard to subsequent seminars, it is strongly recommended that these be held in a typical Asian country. The reason for this recommendation is based on the fact that whereas most Asian people have knowledge of the Western countries as many have studied there, on the other hand few Western dentists have visited the east and gained first-hand knowledge of the dental problems or social conditions there.

- On the whole, the Seminar was very satisfactory and certainly contributed to the better understanding of the problems of the participating countries and should result in increased goodwill and better co-operation in the future.

- It was an excellent idea to permit participants to join in the 15th Australian Dental Congress. It was very much appreciated by everybody.

- Residence at St. Mark's College contributed to the Seminar. Any deficiencies in the physical set-up were more than compensated for by the hospitality and general friendliness encountered.

Achievements of the meeting

In response to the achievements of the meeting questionnaire (WPRO 63/EVAL/4), 61.3% of the replies considered the immediate effectiveness of the Seminar as excellent, 37.8% good and 0.9% poor. Hereunder are some of the comments made in connection with this evaluation questionnaire:

How will this Seminar be reflected in planning and implementing programmes in your countries?

- Being from a relatively developed country, it is difficult to say at this juncture that the influence produced will be inevitably reflected in our attitude to planning and in the nature of the plans themselves.

- It will be a strong supporting argument in planning and implementing programmes in my country.

- The final report of the Seminar with each recommendation will be a very valuable tool in my hands when dealing with government and treasury officials.

- As a guide on which to base intelligent planning in place of the somewhat "hit or miss" methods of the past.

- The Seminar had been of great assistance in the planning of dental health surveys prior to fluoridation.

- The planning of dental health programmes will be made easier by the knowledge of the most effective methods.

- The Seminar has given us a wider outlook of the problems in other parts of the world, has inspired confidence and has opened the way to more national development of our dental health service.

- The Seminar will be of considerable value so long as WHO permits circulation of the substance of the report without undue delay, at least to the governments.

- It is hoped that it will be instrumental in establishing an organized department of dental health on a federal level in Australia.

- The Seminar should result in general overall improvement in teaching of preventive dentistry in the dental schools elsewhere and create an awareness of the existence and importance of the field of dental public health.

- Every attempt will be made to refer to this Seminar's recommendations in planning and implementing programmes, and it is expected that these attempts will meet with a high measure of success. Activity should be evident in all dental health fields and the principles enumerated at the Seminar, governing priority and procedure, will at all times dominate programme planning and consequent action.

General comments

- The discussions and associations had a remarkable effect upon my general understanding and appreciation of the East-Asian people and their problems. I have found the experience most stimulating and from the point of view of developing international goodwill alone, this Seminar has been justified.

- Excellent performance - well conducted Seminar - the opportunities of making and expressing opinions and developing understanding of other countries' problems and accomplishments have been very valuable.

- Release of the Seminar report at an early date is requested.

- It was unfortunate that all consultants and WHO representatives were not living with the participants. Much benefit would have been derived from informal talks with the consultants.

- The guidelines were very clear and helped tremendously in the discussions.

- A very valuable Seminar which should be of great benefit to participating countries, particularly if the recommendations can be implemented.

- This Seminar helped to collect information on dental health from almost all countries in South-East Asia and the Western Pacific, and thus established an overall picture of the state of dental health and dental education in the area.

- This Seminar should be repeated at suitable intervals, preferably 3-4 years.

- Close attention should be given to follow-up procedures of the Seminar. This should include interim reports on progress and events in dental health services, especially as affecting participating countries.

DENTAL HEALTH SEMINAR

WPRO 63/EVAL/1
February 1959

Adelaide, Australia
10-20 February 1959

INTERIM SEMINAR EVALUATION

Hereunder is a series of questions asking your opinion about the work of the seminar so far. The faculty wishes to know your reaction to various aspects of the work and would welcome your suggestions. DO NOT SIGN YOUR NAME.

1. What is your opinion regarding the effectiveness of the following?

	Very Effective	Fairly Effective	Not Effective
a) Plenary session - Orientation and organization	36	6	0
b) Panel presentation of			
Topic I	33	9	0
Topic II	25	15	2
c) Discussion groups	26	16	0
d) Plenary discussion of group reports	32	8	1

	Just Right	Too Short	Too Long
a) Length of the working day	28	0	14
b) Time spent in plenary sessions	36	5	1
c) Time spent in discussion groups	30	4	8
d) Free time available for personal matters and rest	12	30	0

What suggestions have you for the improvement of this seminar?

T o t a l - - - - - - - - - -	258	93	26	377
Per cent - - - - - - - - - -	68.4	24.7	6.9	100

DENTAL HEALTH SEMINAR

Adelaide, Australia
10-20 February 1959

WPRO 63/EVAL/2
February 1959

INTERIM INDIVIDUAL EVALUATION QUESTIONNAIRE
(Administrative)

Each participant is requested to complete the questionnaire WITHOUT SIGNING HIS NAME. We thank you for your assistance and hope you will be frank in your answers.

1. ARRIVAL

Your reception in (a) Sydney (b) Adelaide was (check one)

efficient ..35.. adequate ..6... inadequate ..1..

Comments:

2. ACCOMMODATION

The accommodation is (check one)

good ..17.. mediocre ..20... unsatisfactory ..5..

Comments:

3. FINANCES

Payment of per diem in (a) Sydney (b) Adelaide was (check one)

efficient ..23.. satisfactory ..17. unsatisfactory ..2..

4. PRE-SEMINAR INFORMATION

(a) On the whole the information bulletins were (check one)

pertinent & useful ..39.. of some value ..3.. of no value .....

(b) Working papers were received

ample time for study ..37..

insufficient time for study ..2..

in time for reading ..3..

too late for reading .....

5. TRAVEL

On the whole travel arrangements were (check one)

good ..34.. satisfactory ..5.. unsatisfactory ..1..

6. PLENARY SESSIONS

On the whole the physical arrangements were (check one)

well organized and handled ..28..

as good as can be expected ..13..

left much to be desired ..1..

7. On the whole the library and reference facilities were (check one)

adequate ..30.. inadequate ..7.. poor ..1..

Total ----------	243	73	16
Per cent ----------	73.2	22.0	4.8

DENTAL HEALTH SEMINAR

WPRO 63/EVAL/3
February 1959

Adelaide, Australia
10-20 February 1959

END OF THE SEMINAR EVALUATION (ADMINISTRATIVE)

This questionnaire has been prepared for the purpose of assessing, on an individual basis, certain aspects of this seminar as an aid in the planning and operation of future meetings of this nature. Please check the appropriate statements and write your comments legibly. Since this form is to be unsigned, your frank criticisms, suggestions and comments are cordially invited.

1.	The amount of time available for your preparation to attend the seminar was:	Ample 25		Adequate 15		Too short 3
2.	Travel arrangements were:	Excellent 24		Satisfactory 15		Unsatis-factory 5
3.	The total length of the seminar was:	Satis-factory 41		Too short 1		Too long 2
4.	The schedule of the seminar was:	Satis-factory 36		Too crowded 8		Too loose 0
5.	The working hours of the meeting were:	Satis-factory 37		Too short 1		Too long 6
6.	The leadership of the meeting was:	Excellent 31		Satis-factory 12		Poor 0
7.	Documentation to cover the subject matter was:	Excellent 29		Satis-factory 15		Poor 0
8.	Library and reference facilities were:	Adequate 28		Limited 12		Poor 3
9.	Opportunities to become acquainted with participants, observers and staff were:	Ample 41		Not enough 3		None at all 0

(over)

10. The amount of free time available for personal matters and rest was: Adequate 20 More than enough 2 Not enough 22

11. Physical arrangements such as meeting place, transportation, etc., were: Good 32 Adequate 12 Unsatisfactory 0

12. Accommodation and service were: Good 11 Adequate 24 Poor 8

13. The amount of entertainment furnished was: Just right 32 Not enough 6 Too heavy 6

14. What improvements would you suggest for future seminars:

15. Comments (Use other side if necessary)

DENTAL HEALTH SEMINAR

Adelaide, Australia
10-20 February 1959

WPRO 63/EVAL/4
February 1959

END OF THE SEMINAR EVALUATION

This questionnaire is intended to assess the achievements of the meeting on an individual basis. You are requested to check the items which apply and write legibly your frank opinion and comments with particular reference to the meeting. (PLEASE DO NOT SIGN YOUR NAME).

1. Were you interested in this seminar? — Very much 44 — To some extent ____ — Very little ____

2. Did you learn any new things or get any new ideas? — A great many 25 — Some 19 — None at all ____

3. Did you have enough opportunity to express your own ideas at the meeting? — Ample 39 — Not enough 5 — None at all 0

4. Did you have enough opportunity to exchange knowledge and experience with participants, observers and staff outside the seminar? — Ample 34 — Not enough 10 — None at all ____

5. To what extent do you think the seminar fulfilled its purpose as defined in the early letter from WHO to participants? — Beyond Expectations 6 — Completely 38 — Incompletely ____

If the answer is "Incompletely" give further details:

6. In addition, each of you came with specific objectives and expectations. To what extent do you feel these have been attained? — Beyond expectations 6 — Completely 37 — Incompletely 1

If the answer is "Incompletely" give further details:

7. The discussions of the working papers were: Excellent 17 Good 27 Mediocre ____

8. The presentation periods have been: Provocative and interesting 20 Adequate 23 Inadequate 1

9. The scope of study and discussion was: Adequately covered 40 Too large 2 Too small 2

10. The seminar has been to you: Of considerable value 38 Of some value 5 Of little value ____

If the answer is "Of little value" state why:

Total - - - - - - - -	269	166	4	439
Per cent - - - - - - - -	61.3	37.8	0.9	100

11. How will this seminar be reflected in planning and implementing programmes in your country?

12. Comments (Use other side if necessary)